

THE IRON AGE

THURSDAY, NOVEMBER 22, 1888.

Improved Pipe Cutting and Threading Machinery.

Every one who has ever done any cutting or threading of large sizes of pipe with the old style of die stock, with its long handles, knows of the difficulties with which the work is attended. The improvements which have more recently been effected in machinery of this class by Messrs. Curtis & Curtis, of Bridgeport,

should not be exactly standard. To operate the machine, the pipe is placed in the vise at the back, with the end to be cut against the back of the dies, and is clamped by turning a hand-wheel at the top, which brings it central. Then, having loosened the thumb-screws on the face plate, it is turned to the mark corresponding to the size of the pipe, which brings the dies to standard size. A very slight pressure on the lever on the top forces the gear back into the shell and the dies on the pipe,

gear revolves it runs back into the ring and the dies are brought on to the pipe. Both jaws work on one screw, the top half of the screw being right-hand and the lower half left-hand. By turning the hand-wheel on top of the machine it not only clamps the pipe but brings it central with the dies as well. The Nos. 2 and 3 machines are also made much heavier in some places than in the old style and the pitch of the gear is heavier. The machines thread and cut off all sizes

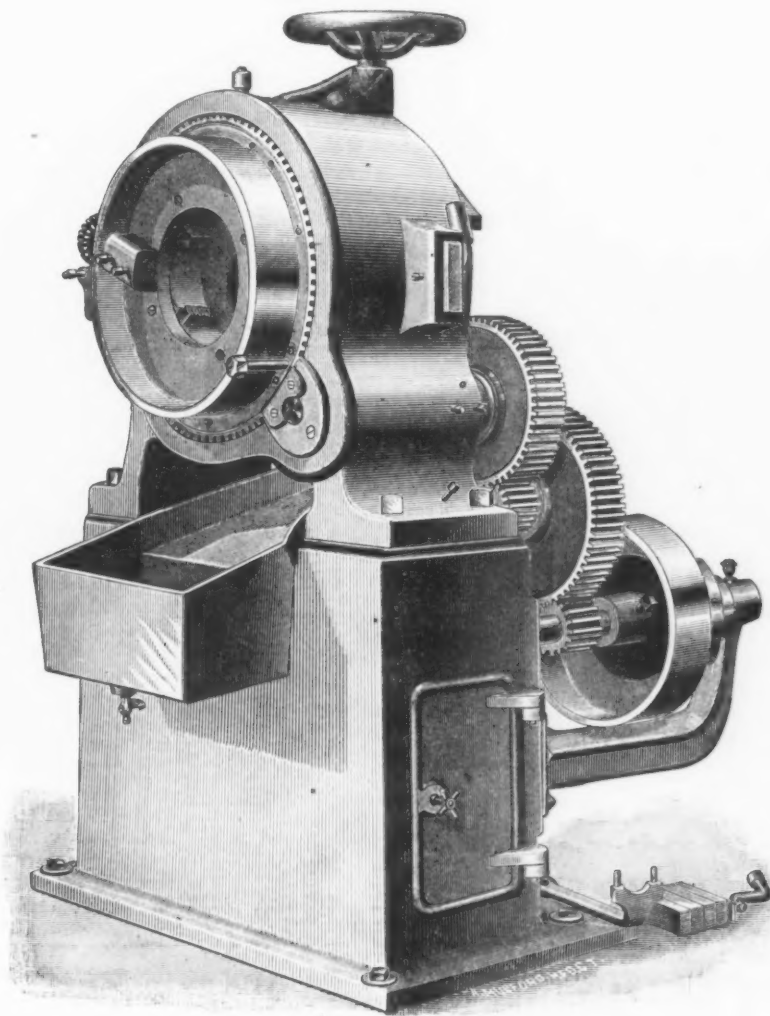


Fig. 1.—Power Pipe Cutter and Threader.

PIPE CUTTING AND THREADING MACHINERY, BUILT BY MESSRS. CURTIS & CURTIS, BRIDGEPORT, CONN.

Conn., are, therefore, of some interest. In their Forbes die stock, the customary long handles have been replaced by gearing, by which compactness and power are gained. The No. 1 stock has a range from $\frac{1}{4}$ to 2 inch, inclusive, both right and left hand threads, and weighs only 60 pounds complete, thus making it very handy to carry around from place to place. The gear that carries the dies fits into the main casting or shell and is supported on the outside of the teeth, while the pinion is imbedded in the side, and the pipe to be cut is held stationary in a self-centering vise at the back. The bits or dies are adjustable and are drawn forward or backward by cams behind them, thus bringing them to standard size, or allow the pipe to be cut over or under size in case the fittings

while the gear is revolved by the crank on the pinion. A change from right to left hand threads, or left to right, is made by simply changing the dies and reversing the motion of the crank. This size of machine is made without a cut-off, as it is found that a three-wheel roller cut-off will do more work than it is possible for any hand machine to do on small pipe. Six-inch nipples can be made on this machine, and by using the ordinary nipple holders a short or close nipple can be cut.

The No. 2 machine works on the same principle as the No. 1, except that a lead screw is used for forcing the dies on to the pipe instead of a lever. It is placed on the back of the gear and screws into a brass ring which has the same number of threads to the inch as the pipe. As the

from 2 to 6 inches, inclusive. They are arranged for power by the addition of a cast-iron base and a worm and gear attached at the back of the pinion.

The power machine which we show on this page is like the Nos. 2 and 3 hand machines, excepting that it is much larger and heavier, and, unlike them, and like the No. 1, only two sets of bits are used for all sizes. Speed and power are thus coupled with cheapness and durability. The No. 3 $\frac{1}{2}$ power pipe machine cuts off and threads all sizes from 2 $\frac{1}{4}$ to 6 inch, inclusive; the No. 4, from 4 to 8 inch, and the No. 5, from 8 to 12 inch.

The H. C. Frick Coke Company, of Pittsburgh, have purchased the Clinton Coke Works on the Mount Pleasant branch

of the Baltimore and Ohio Railroad, one mile above Scottsdale, from B. F. Keister & Co. The plant consists of 110 acres of surface, about 80 acres of coal, and 44 ovens, including the old workings of ribs which may possibly be recovered. It is stated that the price paid for the property was \$90,000. Work has already been commenced, firing the ovens and mining coal.

Manufacture of Wood Screws.

A recent visit to an extensive works, manufacturing wood screws, afforded us an interesting opportunity of witnessing the successive stages of development of a finished wood screw from the rough, raw material in the shape of steel wire rods. Though in a general way the method of manufacture is familiar to many, a brief review of the various processes may not be without interest. The wire rods, which

next blank. The finished blanks, having gone through a rattler, are then taken to the threading machine. In this also the entire operation is automatic. The blanks pass along a slide, one by one, in the same way, are properly gripped and presented horizontally to a cutting tool secured in a movable tool block. This has the necessary amount of longitudinal feed to give the desired pitch to the thread, and has a quick return motion, several cuts being taken before a finished thread is secured. Soda water is used as a lubricant. The finished screws are here also dropped into a receptacle underneath the machine and are then ready for packing and shipment.

From the nature of the operations it is apparent that a large number of machines can be handled by one attendant. All that is necessary is to see that the feed hoppers are kept supplied. The capacity of the machines, of course, depends upon the size of the screw to be made—that is,

Improved Corrugated Steel Tires.

A year or two ago we referred to the corrugated rolled steel tires, invented by Mr. William Fox, of Leeds. At that time these corrugations ran in parallel lines—that is to say, the depressions and projections of the wavy line occurred alternately on opposite sides of the tire. Experience has, however, shown that by making the projections to correspond on opposite sides the tire was materially improved, and by this slight alteration in the design Mr. Fox gets over an aesthetic difficulty, for, while the old type of tire was acknowledged to be of immense service on the tram lines, it had the general appearance of being caked or thickly encrusted with road dirt, and this, taken in conjunction with its unsightly, serpentine configuration when in motion, has been probably the main drawback to its general adoption. By the adoption of this tire, which is suit-

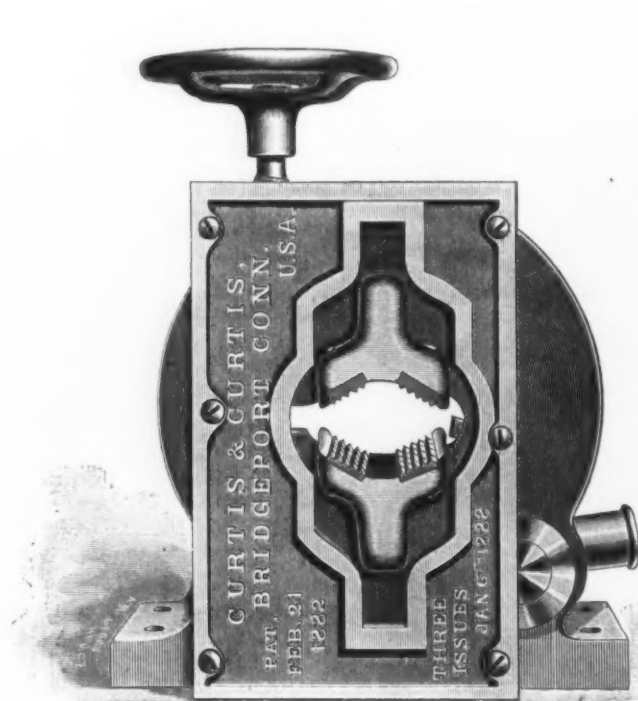


Fig. 2.—Back View of No. 2 Die Stock.

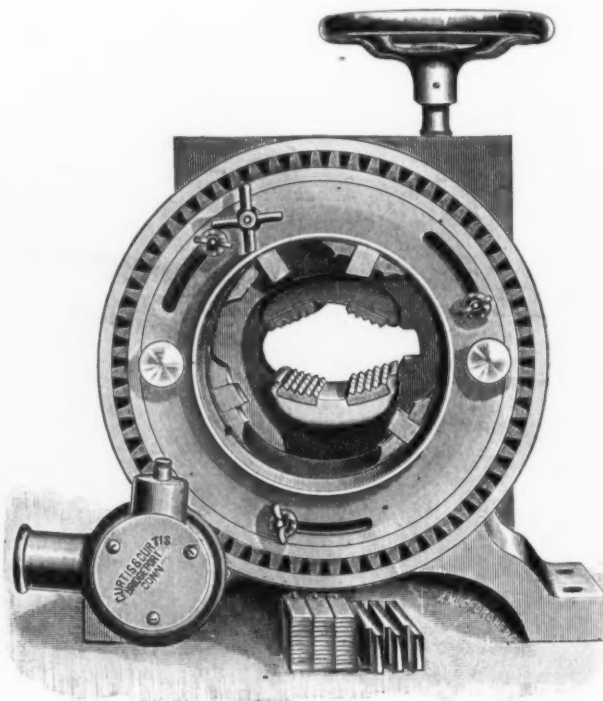


Fig. 3.—Front View.

PIPE CUTTING AND THREADING MACHINERY, BUILT BY MESSRS. CURTIS & CURTIS, BRIDGEPORT, CONN.

to a great extent are imported, are first cleaned and drawn into wire of desired gauge for the different sizes, or rather diameters, of screws to be turned out. This wire on reels is next fed into what are known as heading machines, in which the screw blanks are partially formed, the proper length of wire for a screw being cut off and a head being formed by one or more blows from a header. These rude blanks are then dumped into a form of hopper attached to a machine for cutting the slots in the heads and shaving off the latter so as to present a finished appearance. The necessity of this latter operation becomes apparent when it is considered that the beveled heads as formed in the heading machine are not sufficiently smooth to meet the requirements of practical work, the metal flowing more or less irregularly. The rough blanks are fed along a slide automatically, each one in turn being held firmly by suitable gripping dies, presented to the milling cutter for cutting the slot in the head, and the tool for turning the circumference of the head and the beveled surface on the under side, and is then released, falling into a receptacle underneath to make room for the

the length and diameter—the amount of metal to be removed varying in each case. The work throughout is of an exceedingly interesting character, and furnishes a striking illustration of the perfection to which automatic mechanism has been carried.

Mr. Michael Longridge suggests the use of the following formula for the safe-working pressure for cylindrical furnaces and flues, as applicable to all cases likely to occur in practice:

$$\text{Safe working pressure} = \frac{50t^3}{\sqrt{LD}} - \frac{D}{L}$$

t , the thickness of the plates being taken in thirty-seconds inch; if t be taken in sixteenths, the No. 200 should be used instead of 50.

D = diameter in inches.

L = length in feet.

The Hughes Steam Pump Company, of Cleveland, Ohio, have been awarded the contract for all the pumps—five in number—for the new *Pioneer Press* building in St. Paul. One of the pumps is to be of the compound, duplex type, the balance being high-pressure duplex pumps.

able for the wheels of all classes of vehicles, the constant violent and injurious skidding of the wheels of vehicles when endeavoring to cross, and coming in contact with the edges and grooves of street car tracks is entirely avoided, to show how inventions such as these are worthy the appreciation of the public. The frequent lateral projections on the edges of the tire instantly cause the vehicle to mount the rails. Safety and economy are thus effected—safety because the risk of the occupants of the vehicles being thrown out or shaken is avoided; economy because there is no shock to the wheels, the life of the nave, the spokes, and the felloes is prolonged, the paint is preserved, the springs, pins, and other parts of the vehicle are not twisted or contorted, and consequently last a much longer time without needing repairs.

The Hill Clutch Works, of Cleveland, Ohio, have just made a contract with the Jenney Electric Light Company, of Fort Wayne, Ind., to furnish them a complete plant of power transmission machinery for a station they are putting in that city, to be put in according to their designs.

Natural Gas in Iron Making *

The prominence which natural gas has recently attained as a fuel in the manufacture of iron and steel in the United States naturally directs attention to its relation to other kinds of fuel which are used in this great American industry. It may be premised that no other country, not even Great Britain, is so richly endowed as this country with fuel adapted to the various processes used in the manufacture of iron and steel, in both their crude and finished forms. We have in some sections extensive forests for the supply of charcoal; in others there is an abundance of bituminous coal, much of which makes excellent coke; in Eastern Pennsylvania are extensive fields of anthracite coal; and in Western Pennsylvania and neighboring territory is the natural-gas region. As iron ore is also widely distributed in the United States, no natural obstacles exist to prevent this country from becoming in all respects the most conspicuous leader in the world's iron and steel industries, and this position it is rapidly attaining, as the figures already given abundantly show; in many respects it has already attained this distinction.

Originally all our iron and steel was made with charcoal, which remained our principal fuel for making iron and steel for many years. In the last century bituminous coal was sparingly used in heating furnaces; in the early part of this century it began to be used in puddling furnaces; in 1839 we commenced to make pig iron with bituminous coal in the form of coke, and in 1845 we successfully introduced the use of raw coal in the blast furnace. To-day most of our pig iron is made with coke, either alone or as a mixture with anthracite or raw bituminous coal. In the early part of this century we began to use anthracite coal in the heating furnace, and subsequently in the puddling furnace.

A few years before 1840 we successfully experimented with the use of anthracite coal in the blast furnace, and in that year its use in the manufacture of pig iron was fully established. Anthracite coal is no longer used in puddling furnaces, except in very rare instances, and its use in heating furnaces is rapidly yielding to the encroachments of bituminous coal. Except where natural gas is used, bituminous coal is generally used in our puddling and heating furnaces. Charcoal is still used in the manufacture of "charcoal" blooms, whether made from ore or pig iron and scrap, and it is used in the manufacture of our very small annual product of cemented steel, but it is not used in the manufacture of any other finished forms of iron or steel. In the production of gas for use in Siemens and other regenerative heating furnaces our dependence was chiefly upon bituminous coal and very slightly upon anthracite coal until the advent of natural gas.

In 1854 the United States made more pig iron with charcoal than with anthracite coal. The next year charcoal was passed by anthracite coal, and in 1869 it was passed by bituminous coal. Anthracite continued, however, to be the leading fuel until 1875, when it too was passed by bituminous coal, which has since continued to be the favorite blast-furnace fuel. In the following table the production of pig iron in 1883, 1886 and 1887, classified according to the fuel used, is given in tons of 2000 pounds:

Fuel used. Net tons.	1883.	1886.	1887.
Bituminous.....	2,689,650	3,806,174	4,270,635
Anthracite and coke	929,142	1,655,851	1,919,640
Anthracite alone....	965,454	443,746	418,749
Charcoal.....	571,726	459,557	578,182
Total.....	5,146,972	6,365,328	7,187,206

* From a paper by James M. Swank, printed in the "Mineral Resources of the United States," published by David T. Day, Chief of Bureau of Statistics and Technology, United States Geological Survey.

The development of natural gas in this country as a fuel in the manufacture of the finished forms of iron and steel dates from 1874. (It is scarcely necessary to say that natural gas is not used in the manufacture of pig iron.) At the Siberian rolling mill of Rogers & Burchfield, at Leechburg, in Armstrong Co., Pa., natural gas, taken from a well 1200 feet deep, was first used as a fuel in connection with our iron and steel industries. In the fall of 1874 it was announced that during the preceding six months the gas had furnished all the fuel required for puddling heating, and making steam at these works, not one bushel of coal having been used. Between 1874 and 1881 natural gas for puddling was successfully used at the same rolling mill; at the mills of Spang, Chalfant & Co. and Graff, Bennett & Co., in Allegheny County, Pa., and at the rolling mill of the Kittanning Iron Company, at Kittanning, Pa., in each instance the gas used at these works was obtained from wells that were sunk for oil but were found to produce only gas. In 1883 the substitution of natural gas for bituminous coal in rolling mills and steel works received much attention at Pittsburgh, owing to the discovery of natural gas in large quantities at the neighboring town of Murrysville, in Westmoreland County, Pa., but as late as September, 1884, there were in all only six rolling mills and steel works in the United States which were using the new fuel. During the next two years the use of natural gas in the manufacture of iron and steel made rapid progress. In August, 1886, there were 68 rolling mills and steel works which used the new fuel. During the next 15 months still further progress was made. In November, 1887, there were 96 rolling mills and steel works which wholly or in part used natural gas as fuel, and over 100 are now using it. The whole number of rolling mills and steel works in the United States in November, 1887, completed or in course of erection, was 445, of which, as will be seen from the above figures, nearly one-fourth used natural gas as fuel.

Of the total number of rolling mills and steel works which were using natural gas in November, 1887, 57 were located at Pittsburgh and elsewhere in Allegheny County, Pa., 15 were in the western district of Pennsylvania outside of Allegheny County, 7 were in Wheeling or its vicinity in West Virginia, and 17 were in Ohio. The territory in which are located the iron and steel works which use natural gas for fuel extends as far east as Johnstown, Pa., 79 miles east of Pittsburgh. In Ohio natural gas is used in the mills at Youngstown, in the northeastern section of the State, piped from wells in Pennsylvania, and at Findlay and Bowling Green, in the northwestern section of the State, obtained from local wells. In the intervening country between Youngstown and Findlay, which contains many large iron and steel works, including those at Cleveland, natural gas is not used. At Steubenville, Bridgeport, Bellaire, Martin's Ferry, and a few neighboring places on the Ohio side of the Ohio River, natural gas, piped from wells in Pennsylvania, is used in iron and steel works. Natural gas has been found at a few points in the central and eastern parts of Indiana, but at the end of 1887 the supply was so small that no rolling mill or steel works in that State was using this fuel. The gas used in West Virginia is obtained from wells in Washington County, Pennsylvania. Natural gas not having been found in the anthracite coal region or its vicinity, its use has not interfered with that of anthracite coal in rolling mills and steel works, but wherever it is used it displaces bituminous coal. It displaces no other fuel.

Nor has the use of natural gas as a fuel reduced the production of bituminous coal

in any State, not even in Pennsylvania, where natural gas is most used. On the contrary, the production and consumption of bituminous coal in this country have steadily increased in recent years. In nearly every State and Territory, including Pennsylvania, the production of bituminous coal in 1887, according to Mr. Ashburner, was greater than in 1886, while the aggregate for the country at large was much greater. The greatly increased production in 1887 of pig iron manufactured with coke and with coke mixed with anthracite will account for a large part of the increased production of bituminous coal in that year. In 1888 the consumption of bituminous coal for this purpose will be less than 1887. We do not think that the consumption of natural gas in our iron and steel works will increase in 1888. It did not increase in 1887 as much as in 1886.

The remarkable increase in our production of iron and steel in 1886 and 1887 was, of course, possible without the possession of natural gas, but the cheapness and abundance of this new fuel, and the temptation which it offered to enlarge old plants and construct new ones, are influences which have certainly had much to do with the present tendency to glut the market with finished iron and steel products. Natural gas is, however, not now supplied at as cheap rates as a few years ago.

The possession of natural gas, desirable and valuable as it is, does not insure any of the localities which use it in the manufacture of iron and steel against the sharp competition of other localities which do not have it, but which possess other advantages, as, for instance, proximity to markets of large consumption. This fact is well illustrated by a comparison which we recently made of the production of Bessemer steel in Allegheny County, Pa., which includes Pittsburgh, and in Cook County, Ill., which includes Chicago—the former possessing natural gas and the latter lacking it entirely. Chicago made more tons of Bessemer steel ingots in 1887 than Allegheny County, Pa. And it made many more tons of Bessemer steel rails. The figures are as follows: Chicago—ingots, 531,054 gross tons; rails, 439,345 tons. Allegheny County—ingots, 518,694 gross tons; rails, 287,363 tons. Joliet is a near neighbor of Chicago, in the same State, and Johnstown, Pa., is a near neighbor of Allegheny County, the former lacking natural gas and the latter possessing it. Adding the production of Bessemer ingots and rails at Joliet in 1887 to the figures for Chicago, and adding the production of Johnstown to that of Allegheny County, we have the following totals: Chicago and Joliet—ingots, 748,271 gross tons; rails, 642,580 tons. Allegheny County and Johnstown—ingots, 728,797 gross tons; rails, 414,027 tons. Who would have predicted ten years ago that Chicago would make more Bessemer steel in 1887 than Allegheny County, Pa.?

But natural gas, strange as it may appear, has a rival as a cheap and cleanly fuel in water-oil gas produced from petroleum, which is steadily growing in popularity among our iron and steel and a few other manufacturers. It is claimed that this fuel is cheaper than coal or than gas made from it, and that it possesses all the desirable qualities of natural gas, and is far safer. This new fuel possesses also the advantage that it can be produced and used where natural gas cannot be obtained, and even where the cost of coal may be too expensive to justify the use of the latter fuel.

No section of our country possesses a monopoly of all the advantages for producing iron and steel. Pittsburgh has natural gas for its rolling mills and steel works, and is close to the Connellsville coke field,

but it brings its ores long distances. Chicago is nearer than Pittsburgh to Lake Superior ores, but it is hundreds of miles away from Connellsville coke, and it lacks natural gas as a substitute for raw bituminous coal. In Alabama and Tennessee ores and fuel are found in close proximity, and unskilled labor is cheaper than in the North, but much of the pig iron made in these States must be hauled to distant markets at great expense. In New England but little iron and steel in their crude forms is now made, but the skill in their manipulation which has been accumulated in 200 years yet remains. The iron industry of the Rocky Mountain region will always have the stimulus of a home market remote from destructive competition. There is room in almost every section of this great country for the iron and steel industries which we have in late years so wonderfully developed, and which are destined to expand still further as the years roll on.

Triple-Expansion vs. Compound Engines.

Speaking of the adoption of triple-expansion engines by the Union Steamship Company, *Engineering* remarks:

There are now ten steamers of the fleet fitted with the improved engines, and the saving in consumption of coal varies from 16 per cent to 32 per cent., according to the age and character of the ship at the time of alteration. For instance, one of the newest mail steamers only shows a saving at present of 16 per cent, while the *Anglian* in the intercolonial service shows an increase of 32 per cent. The average saving on the whole fleet is about 21 per cent. of actual consumption. As the bunkers only admit of a part—say two-thirds or three-fourths—of the coal needed on the voyage being taken from England, the saving is on the fuel shipped on the voyage, so that the monetary gain becomes even greater. One of the last vessels converted was the *Tartar*, which has recently made the "record" passage from Algoa Bay, South Africa, to Plymouth, her gross time being 17 days 6 hours and 15 minutes, and net time 17 days and 52 minutes, and it may be interesting to note the results of coal consumption. Her engines during the passage, we are officially informed, developed 3830 indicated horse-power, the revolutions per minute averaging 64, and the average speed per hour 14½ knots. The coal consumption was equal to 1.6 pound per indicated horse-power per hour. The old engines used to require 1.99 pound per hour per indicated horse-power, and even then the speed was not so great. This is a saving of 20 per cent. on the actual coal consumed.

The Colonel Scranton, a locomotive recently rebuilt from a wood-burner to a culm-burner at the Delaware and Lackawanna shops, at Scranton, has, according to the *National Car and Locomotive Builder*, a new feature that will be a decided convenience to the enginemen. Heretofore the engineer and fireman of locomotives of this make have had difficulty in conversing with each other, owing to the fact that they are so far apart, but this trouble has been obviated in the Colonel Scranton by the introduction of an alarm bell and speaking tube, which render prompt communication possible. The important improvement was introduced by the master mechanic, Mr. Charles Graham, and this is the only engine in the country that has such an outfit.

One of the most successful cable roads in the West is the Olive street branch of Missouri Railroad Company, St. Louis,

Mo. This line has been in operation continuously for the past nine months, and the inspectors report the cable as being in perfect condition and not a strand broken. The entire length of the cable is 24,250 feet, and was made by the Broderick & Bascom Rope Company, St. Louis, Mo.

The Burton Stock Car Works.

The Burton Stock Car Company have an extensive establishment at Wichita, Kan., for the construction of their improved cars for the transportation of animals. These cars are so arranged that their dumb passengers are carried with proper provision for their comfort, and are thus not only treated humanely, but are delivered in good condition at the end of their journey, which is an important consideration, even if they are only consigned to the slaughter house. These cars are covered by a number of patents, issued at intervals from 1880-87, with others pending. The company have a capital of \$2,000,000, and maintain offices at Boston, Chicago, Portland, Me., Washington, D. C., and Kansas City, Mo. J. T. Chamberlain is superintendent of the works, at Wichita, and W. A. Caswell is assistant superintendent. The plant comprises a number of buildings, the most important of which are as follows:

1. The wood-working shop, one-story brick, 125 x 300 feet, iron truss roof, supplied with a great variety of machinery of the most improved pattern; all lumber delivered at the works mill-sawed; 220 horse-power engine, built by the Fitchburg Steam Engine Company; Thomson-Houston electric light plant; will shortly put in an exhaust fan for carrying away shavings, &c.

2. The blacksmith and machine shops, occupying one brick building, 125 x 300 feet, cut into two parts by a partition; 20 forges, one Bement & Miles double shear, one 500-pound Bradley trip hammer, a bolt furnace and bolt-cutting machine, a "bull dozer" and furnace for shaping iron built by Williams, White & Co., of Moline, Ill., a horizontal drill, double-acting Bement & Miles lathe, Bignall & Keeler Mfg. Company's pipe cutter, together with the usual lathes, planers and punches, most of which were made by Bement & Miles; foundations have been laid for a brick addition, 80 x 120 feet.

3. Iron foundry, built of brick, 75 x 300 feet, containing two cupolas. Other buildings comprise a corerom, a brass foundry, a tin shop and a storeroom, each 50 x 60 feet. The tin shop is needed to manufacture watering troughs, with which each car of this system is supplied. No foundry-work, either in iron or brass, has yet been done, but these departments will probably be in operation by January. The force employed at present numbers 175 men, which will soon be enlarged. The capacity of the works is now 10 cars per day. Refrigerator cars are to be added to the line now made and probably street cars will be undertaken later.

Bearing Plates for Rails.—In consequence of the enormous consumption of timber for railroad ties various methods have been experimented with for increasing the life of the ties by reducing the wear close to the rail, and thus enabling softer and cheaper timber to be used. The most promising of these methods is the use of the Servis tie plate, which has been tried on a number of roads since 1886, and which has given satisfactory results. The plate consists of an iron or steel plate, of channel form; this is put on the tie under the rail and hammered down, and the first heavy train brings it to a solid bearing. The flanges cut into the timber and prevent the shifting of the plate. In some

cases it is made narrow, and the spikes are driven at the side; in other cases it is wider, and has holes for the spikes. It has been urged that with one metal rail on a metal plate there would be liability for the former to shift, causing extra strain on the spikes. This objection, however, does not seem to be experienced in practice, as testimonials state that the line is kept in better line and gauge with these plates than when the rails rest directly on cedar ties. These plates are used on the Canadian railways, Maine Central, Fitchburg, New York and New England, West Shore, Manhattan (Elevated) and other railroads.

The Niedringhaus Memorial Building.

Messrs. W. F. and Frederick G. Niedringhaus have at present in process of erection on the northwest corner of Cass avenue and Seventh street, St. Louis, Mo., a structure which will be known as the Niedringhaus Memorial Building. This structure is being erected as a place of instruction and amusement for the employees of the company, and as a fitting tribute to the memory of Walter, son of William F. Niedringhaus, secretary of the St. Louis Stamping Company, whose death occurred about two years ago. The building, which is at present in course of construction, is designed to have a frontage of 65 feet, with a depth of 110 feet, and will be two stories in height, with a French gabled mansard roof. The plans call for a front of pressed brick, with stone trimmings, and wide stone steps leading to the main entrance. The windows are of the Gothic style of architecture, and are sufficiently numerous to render the interior light and pleasant.

In the arrangement of the rooms, an apartment 15 x 20 feet at the right of the main entrance is set apart for the use of the directors; to the left of the main entrance is a library and reading-room, 28 x 20 feet in size, both having high ceilings and windows extending from the floor almost to the ceiling. On either side of these rooms are wide stairs leading to the gallery and basement. In the rear is the lecture-room, an apartment 60 x 69 feet in size, and of an elongated semi-circular shape. The stage, which is planned to occupy a space 25 x 18 feet in size, has on each side class-rooms, which are each 12 x 17 feet in dimensions, and which can be utilized as dressing-rooms in case the lecture-room is being used for amateur theatricals or entertainments of a similar nature. The seating capacity of the lecture-room is 1300. The second story is practically a gallery, with a seating capacity of 400. The front portion of the basement is designed for a dining-room, with accommodations for feeding from 300 to 400 people at a time. It is 50 x 81 feet in size, perfectly lighted by English basement windows. In the rear is a kitchen 22 x 18 feet in size, and along one side adjoining the kitchen and dining-room is a bowling-alley.

It is the purpose of the projectors of this enterprise to erect a gymnasium in the rear of the main structure. The plans, we understand, are not yet completed, but they contemplate everything necessary to a perfectly equipped gymnasium, including baths. It is estimated that the total cost of the building and furnishings, exclusive of the library, will approximate \$20,000. While the building is designed primarily for the use of the employees of the St. Louis Stamping Company, we understand that its privileges may be enjoyed by any eligible person residing in the city. It will be absolutely free to those for whose benefit it is being erected, the running expenses being borne by the Messrs. Niedringhaus.

New Two-Spindle Milling Machine.

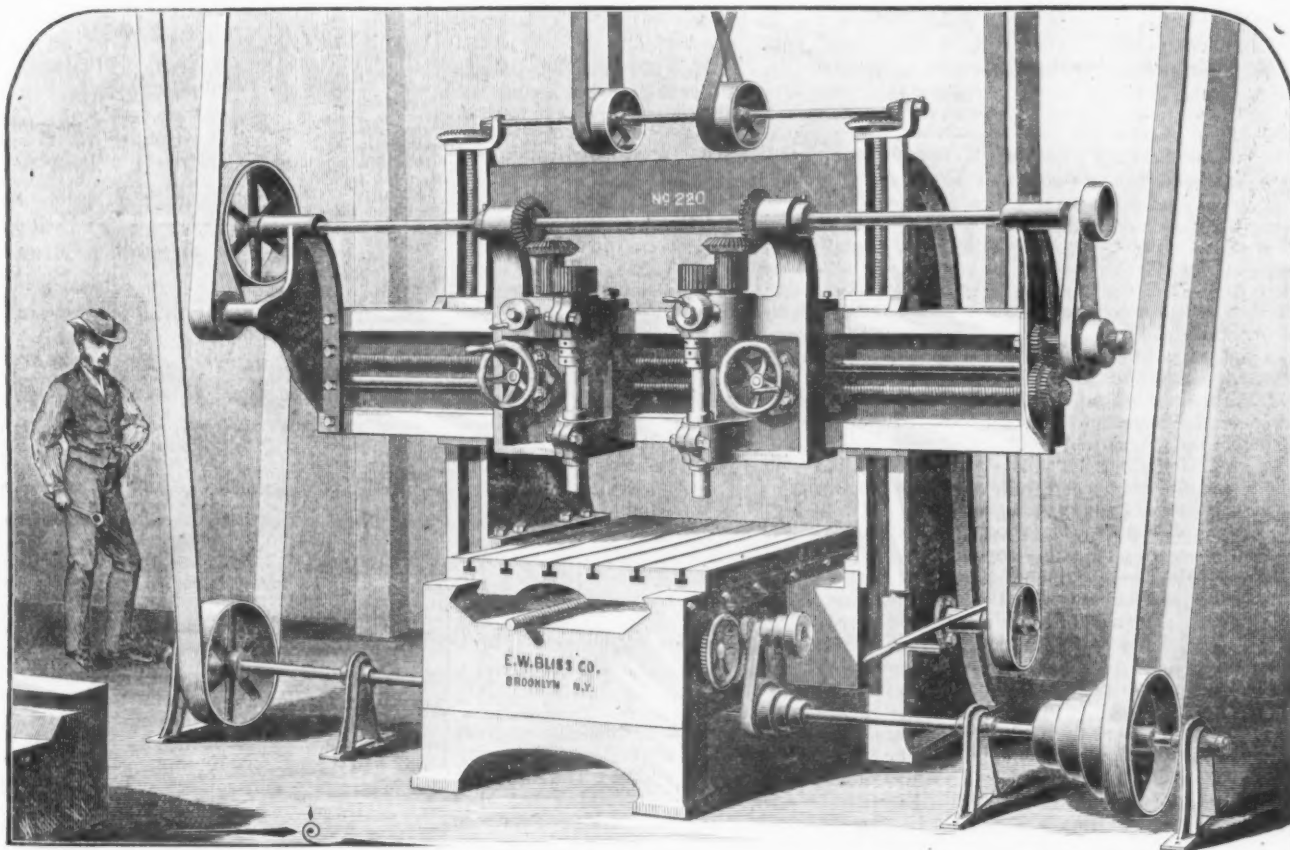
We show, on this page, a milling machine of new design, recently built by the E. W. Bliss Co., of Brooklyn, N. Y., for use in their own works.

As will be seen, the general arrangement is that of a planer, but, in the place of ordinary planer tools are substituted vertical spindles for butt milling. The table has a longitudinal travel of 36 inches, and is fed by a screw, which may be operated by the hand-wheel shown at the right side of the bed, or fed by power, in either direction. Four speeds for feed for the table are provided, and, in addition, there is a power "rapid transit" motion, which is operated to run the table in either direction, by means of the hand-lever shown at the right of the bed. The quick motion is especially intended for

required, and the builders are now filling several orders for machines with 5 to 6 foot lengths of table. The driving-shaft, carried by the cross-head, is spindled its length between bearings, to allow for the lateral motion of the saddles, and is driven from the floor counter-shaft by the familiar arrangement of belting shown, which dispenses with the necessity of a tightener to make up for the vertical adjustment of the cross-head. In some of the machines now in course of construction the arrangement is such as to allow the floor counter-shaft to be dispensed with, and one at the top of the machine to be substituted, which, in some cases, might be considered preferable. By the use of the two spindles on the work for which this machine was designed, and with special attachments to facilitate the setting, this tool is now doing work that heretofore required the use of

Depew on Rates.

Respecting competitive rates on railroad lines, which are causing so much disturbance among shippers of merchandise, more than counterbalancing any advantage arising from temporary reductions, President Depew, of the New York Central, says: "The differential rate is all wrong in theory undoubtedly, but, after several disastrous wars to get rid of the system, ninety-nine one-hundredths of the railroad men of the country believe that there is no other way of promoting staple rates or of protecting railroad investors. A railroad tariff between two points should be as well known and as staple as the postage rate." "I believe," he says again, "that in time the theory to which the country is now committed, that the Government, through an interstate commission, shall prevent



TWO-SPINDLE MILLING MACHINE, BUILT BY THE E. W. BLISS CO., BROOKLYN, N. Y.

running the table back after the cut is finished, and, being entirely independent of the cone feed, both can be in operation at one and the same time, thus saving the trouble of throwing off the cone feed in order to run the table back for starting a new cut. The cross-head is raised and lowered by power, much in the same manner as in a planer, and, in addition, each spindle has an independent vertical adjustment of 2 inches, operated by the hand-cranks shown at the upper boxes on the saddles. Each saddle is capable of independent lateral motion, operated by the large hand-wheel at the front, and has also a power attachment for feeding, supplied with four changes of speed. As in the case of the table, the saddles may be moved independently from the power feed while the latter is in operation. The cross-head is made of sufficient length to allow the saddles to be run out far enough to bring the milling cutters outside of the housings, between which the distance is 54 inches.

The machine illustrated was built for special work not requiring a long table, but the latter can be made of any length

five planers, thus proving itself a most valuable addition to the equipment of a machine shop.

Sometimes the fastenings of crown gear wheel on the upper end of a turbine water-wheel shaft are neglected, and allowed to get loose, and the wheel to slip down and out of gear. It does it gradually until when nearly out of gear, and then if the cogs are pretty well worn the points unable to stand the strain give way, and the whole wheel is stripped.

General Dumont, Supervising Inspector-General of Steam Vessels, reports inspecting 6425 vessels last year, an increase of 305 vessels over the year previous. Nearly 30,000 licenses were issued. There were 202 lives lost by accidents to vessels during the year, a lower number than in any previous year. There were 50,000,000 passengers carried during the year. The expenses of the bureau were \$257,000. He recommends that ferryboats be limited in the number of passengers carried, and that yachts and all small steam craft be inspected.

railroad abuses and extortions and discriminations upon one line, will be extended to legalize a pool, by which method alone precisely the same evils can be stopped when practiced by competing lines against one another. So far as the public is concerned, all routes from one point to another are one, and a system which simply prevents one line from discriminating in favor of one of its own customers as against one another, and on the destruction of the pool promotes still more violent discriminations to one shipper as against others by different lines, has enormously exaggerated the evils which it was created to remedy. The whole of the existing trouble is the impossibility of railroads legally forming a pool. A recognition of a proper system will settle the whole difficulty in 24 hours."

The Interstate Commerce Commission has addressed the New York Central Railroad asking for information regarding the illegal cutting of rates which has been alleged against its competitors. Chairman Cooley is desirous of proving the facts with a view to ascertaining if there is sufficient ground for proceedings by the

Federal Commission. It is understood that the Central has replied that it can furnish no specific evidence from the nature of the case, but has been satisfied, from the course of its traffic, that the tariff was not being lived up to by its rivals.

Calumet and Hecla Stamp Mills.

We are indebted to the *Houghton Mining Gazette* for the following description of this plant:

The Calumet and Hecla stamp mills, at which the immense product of the mine is stamped and made ready for smelting, are situated at the village of Lake Linden. The site occupied consists of lot No. 4, comprising about 25 acres of land, which is occupied with their buildings, docks, yards, &c. There are two separate stamp mills, the Calumet and the Hecla, into which, however, the rock from the mine is put indiscriminately. The Calumet Mill is said to be the largest single dressing plant in the world, covering as it does 1½ acres of ground. It was very much enlarged last season, its total length now being 460 feet, with a width of 105 feet, its height being 66 feet. Connected with the mill on the east side are three annexes 100 feet wide, in which is the slime plant for this mill, two of them being 75 feet deep and the other 50 feet deep. Its stamping plant consists of eight head of stamps now running, with three new stamps in process of erection, making 11 in all. There are 272 jigs now in operation and when the three new head of stamps are completed 374 jigs will be employed. There are 28 slime tables in use and with the three additional heads there will be 44. There are also two Heberle mills for recrushing a coarse gangue, discharged from the rough sieves and rejiggers. The Hecla Mill building is 300 feet long, 105 feet wide and 66 feet high, with two annexes 100 feet wide by 70 feet deep, one of them being erected during the past season and will contain the slime plant. The mill operates seven head of stamps, 238 jigs and will have 28 slime tables, which will probably be running before the close of 1888. The slime tables are all double deckers without a dead head and have been shown to yield 60 per cent. more ingot from the same amount of slime than tables using a dead head. The mill also contains two Heberle mills similar to those in use at the Calumet Mill.

During the last year the whole method of handling the mineral in the matter of sending to smelting works has been changed; where it was formerly sent in barrels it is now sent in cars, the first cars being sent from the Hecla mill in December, 1887, and from the Calumet mill in July, 1888. There are now 10 cars employed in carrying the mineral from the Hecla mill and 15 from the Calumet; cars hold about 5 tons each. The cars are loaded in the mills and run directly into the mineral storehouse at the smelting works over an elevated track, dumping their load into bins for its reception. In the old method of sending the mineral in barrels about 4000 barrels were used each month. This new system was originated by the Calumet and Hecla Company, and as yet is used nowhere else. The cars bringing the rock to the mills from the mine to be stamped run into the upper story of the mill over an elevated track and dump their load into the rock bins, the bin capacity of the two mills being 10,000 tons.

The stamps used at the mills are the Leavitt stamp. The present capacity of the stamping plant is about 3200 tons rock per day, and when the three additional heads are working the total capacity of the two mills will be about 3900 tons rock per day. Recently, as a matter of experiment, a solid anvil has been placed under No. 1 Calumet head, the anvil weighing

about 57 tons, resting on the main foundation. So far this solid anvil is working very satisfactorily and is crushing 260 tons per day without an increase in the consumption of steam. This shows a gain of from 100 to 120 tons over the old style of "Ball" stamps and an increase of about 40 tons over the same head when using spring timbers as a foundation for the anvil. In addition to the driving engine Wabeek, which will be mentioned later, each mill has its own driving engine. So if any accident should happen to the driving engine Wabeek or to the wire rope transmission, the small driving engine could be at once started and a stoppage of the mill avoided. The stamp mill boiler house is a building 210 feet long by 70 feet wide and contains 10 fire-box boilers, with a capacity for 14. The steam is conveyed to each mill through a 24-inch pipe running through a 7 foot tunnel. The feed plant is comprised of two Worthington feed pumps, 12 x 6 x 10, and one Hyatt 8-foot filter, which filters 200,000 gallons of water each 24 hours, that being the amount the boilers are now evaporating. The chimney for these boilers is of wrought iron, brick lined, 12 feet in diameter on the inside and 185 feet high.

There are two sand-wheel buildings, each about 60 feet square, in which are sand-wheels 43 feet in diameter with a bucket width of 6 feet. These sand-wheels lift all the water and sand passing through the mills to a height of 35 feet into a launder 4 feet wide which conveys it to the lake. The electric light plant consists of two No. 7 Brush dynamos supplying power for 60 odd lamps. Another is soon to be placed to be used on an outside circuit.

The water-works building contains three pumping engines—"Ontario," which is a vertical double-expansion compound pumping engine with a nominal capacity of 20,000,000 gallons, but is now pumping 23,000,000 gallons; "Erie" pumping engine, same type as the "Ontario," with a capacity of 10,000,000 gallons, and "Huron," a horizontal pump geared back on to a horizontal engine with a capacity of 20,000,000 gallons, used as an auxiliary engine. The aggregate capacity of the present water-works is 50,000,000 gallons every 24 hours, of which the mills are now using about 33,000,000 gallons. The addition to the water-works, for which the piles are now being driven, is designed for two vertical, triple-expansion compound pumping engines with a pumping capacity of 40,000,000 gallons each per 24 hours; only one, however, will be placed the coming season. These engines are to be called the Winnipeg and Michigan, the latter to be the one first set up, part of it being already on the ground. The foundation of the building will be laid as early in the spring as practicable. The aggregate capacity of all the pumps will be 130,000,000 gallons every 24 hours; the mills, however, will probably not need much over 60,000,000 gallons, the plant being duplicated for the sake of safety. In the present water works building is also the driving engine Wabeek, mentioned previously, of the same general type as the Ontario. The engines, stamps, boilers and sand-wheels were all designed by Mr. E. D. Leavitt, Jr., the company's consulting engineer. The boiler plant for the water works consists, for the present, of two 90-inch fire-box boilers 34 feet long, carrying a pressure of 120 pounds. Two more boilers of the same size, but to carry a pressure of 180 pounds, are to be added, one of which is to be placed this fall. The addition for which the piles are now being driven is to be 70 x 64 feet, and will be built of iron as far as practicable. The building will be supplied with a 30-ton traveling crane, for the purpose of erecting the heavy machinery. Mr. F. G. Coggin, the superintendent in charge, has

held his position with the Calumet and Hecla Company nine years, during which the entire stamp mill plant, as at present arranged, has been set up under his supervision and largely in accordance with his plans.

The World's Wheat Crop of 1888.

The *Paris Echo Agricole* presents the following estimate of the production, exports and imports of wheat of the world for the current crop year:

Countries.	Probable production, bushels.	Probable imports, bushels.	Probable exports, bushels.
Russia.....	246,960,000	.....	100,760,000
France.....	244,216,000	68,600,000	.....
Austria.....	.....	.....	.....
Hungary.....	156,408,000	.....	16,464,000
Spain.....	115,088,000	5,860,000	.....
Italy.....	101,528,000	38,418,000	.....
Germany.....	82,530,000	30,184,000	.....
United Kingdom.....	62,632,000	150,920,000	.....
Turkey.....	30,040,000	.....	5,405,200
Roumania.....	21,952,000	.....	13,720,000
Bulgaria.....	13,720,000	13,720,000	.....
Portugal.....	6,860,000	1,920,000	.....
Greece.....	4,664,000	2,744,000	.....
Servia.....	4,380,400	.....	1,372,000
Holland.....	4,116,000	12,348,000	.....
Denmark.....	3,567,200	.....	.....
Sweden and Norway.....	2,744,000	2,744,000	.....
Switzerland.....	1,646,400	11,792,000	.....
Total bushels.	1,111,868,000	340,250,000	146,811,200
United States and Canada.....	409,320,600	.....	96,040,000
Chili and Arg. Republic.....	27,440,000	.....	10,983,200
Totals...	1,548,628,000	340,250,000	253,834,400
India.....	260,680,000	.....	27,440,000
Asia Minor.....	37,044,000	.....	2,744,000
Persia.....	21,952,000	.....	2,744,000
Syria.....	13,720,000	.....	1,372,000
S. E. Asia.....	8,252,000	.....	1,372,000
Totals...	1,006,256,000	340,250,000	289,506,400
Australia.....	38,416,000	.....	12,348,000
Algeria.....	19,208,000	.....	2,744,000
Egypt.....	13,720,000	.....	4,116,000
Grand totals..	1,977,600,000	340,250,000	308,714,400

The deficit is only 31,535,600 bushels, according to the foregoing statement. An English estimate makes the deficit 71,618,400 bushels. The continent of Europe in 1887 had a good wheat crop, both as regards quantity and quality. The visible and invisible stocks August 1, 1888, were in excess of any deficit yet established. There was in France alone, exclusive of flour, on August 1, 1888, 32,728,000 bushels of wheat, according to the author of the French estimates.

Walston Coke in Cleveland.—It is stated that the Connellsville coke operators have recently encountered a rival for their product in the market at Cleveland, Ohio. The coke manufactured by the Rochester and Pittsburgh Coal and Iron Company has recently been introduced into that market. An analysis of their coke shows a decidedly good average. The headquarters and mines of the company are at Walston, Jefferson County, Pa. They control about 20,000 acres of coal lands. The lower Freeport, which in many localities is worthless, here thickens, giving not less than 6 feet of clean coal. The capacity of the mines at Walston and Adrian is about 7000 tons a day. There are over 700 ovens at Walston and 450 at Adrian. The coke reaches Cleveland by way of Salamanca and the New York, Pennsylvania and Ohio.

The number of locomotives in use in German railroads was 12,450 in the year 1885-86, the average age being 12.49 years. Fifty engines built previous to the year 1850 were still in use at the date referred to, the oldest of which dated from 1845.

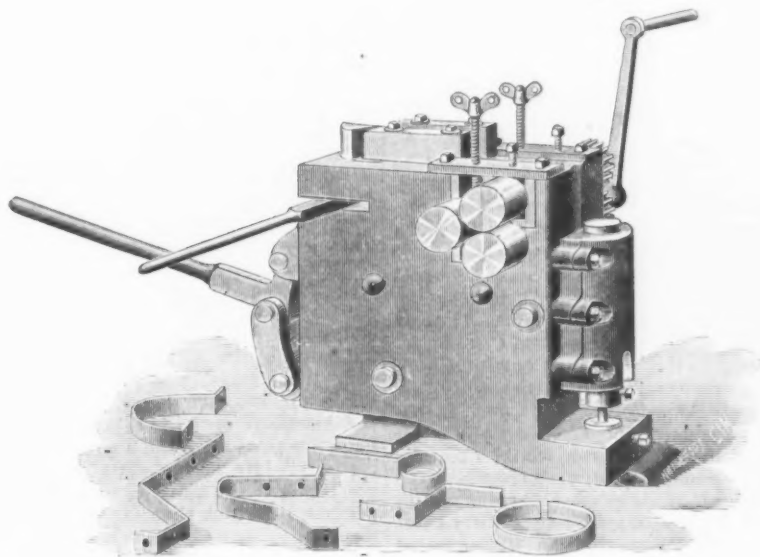
Combination Machine.

Messrs. George C. Keene & Co., of Cincinnati, Ohio, are offering the trade a combined shear, punch, band-iron former and bending machine adapted to the use of sheet-metal workers. A general idea of the appearance of this machine may be gained from an inspection of the engraving presented herewith. By means of the lower lever, shown at the left of the engraving, the shear attachment placed directly forward of it at the lower side of the body is readily operated, as is also the punch attachment, shown at the right. By means of compound levers fitted with links and steel pins having a relative bearing to each other all unnecessary strain on the parts is avoided. The punch and shear attachments work in unison, the latter being so arranged as to enable the operator to slit iron if desired. The second lever handle shown in the cut operates the band-iron bending attachment placed above it. The forming attachment consists of three steel rolls 3 inches in diameter, adjustable by means of large thumb-

employees in 228 shops, of whom 7260 are males, 1240 females, and 302 minors. Toledo's 7560 employees are in 159 shops, the males being 5791, females 1225, minors 544. Dayton, with 129 shops, has 9057 employees, of whom 6404 are males, 1736 females, and 917 minors. It must be understood, however, that the above figures are only for the shops inspected, and do not include a large number in each of the cities that the inspectors were unable to visit.

Sheffield Cutlery.

Prince Krotapkin, writing in the *Nineteenth Century*, says: "The Sheffield cutlery—one of the glories of England—is not made by machinery; it is chiefly made by hand. There are at Sheffield a few firms which manufacture cutlery right through from the making of steel to the finishing of tools, and employ wage-workers, and yet even these firms—I am told by my friend, E. Carpenter, who kindly gathered for me information about the Sheffield trade—let out some part of the work to the small



COMBINATION MACHINE, BUILT BY GEORGE C. KEENE & CO.

screws placed above and operated by a geared crank.

The machine is made in one size only, weighing 250 pounds. The body measures 24 x 24 x 6 inches, and is adapted to cut, form and punch from $\frac{1}{8}$ inch to the lightest bar iron 2 inches wide, the working parts being concealed from view. It is kept free from obstruction, works with perfect ease, and, taken as a whole, constitutes a convenient and durable combination machine.

Ohio's Workshops.—The fifth annual report of Henry Dorn, chief inspector of shops and factories, was filed with the Governor recently. Mr. Dorn recommends among other things that stationary engineers be compelled to pass a thorough examination as to their fitness, and that owners of steam boilers be compelled to insure them; that the child labor law be so amended as to prohibit the employment of children under 14 years of age. A summary of the statistics of the report shows that there are 164,675 employees engaged at work in 3271 shops inspected, in which there were 1386 changes for bettering the condition of the workmen ordered. In the five largest cities of the State there is a total of 95,888 employees in the shops inspected. Of these, 36,681 are in 730 shops in Cleveland, 29,133 being males, 4686 females, and 2862 minors. In Cincinnati there are 33,788 employees in 717 shops, 24,340 being males, 7032 females, and 2416 minors. Columbus has 8802

masters. But by far the greatest number of the cutlers work in their homes, with their relatives, or in small workshops supplied with wheel power, which they rent for a few shillings a week. Immense yards are covered with buildings, which are subdivided into series of small workshops. Some of them cover only a few square yards, and there I saw smiths hammering, all the day long, blades of knives on a small anvil, close by the blaze of their fires. Occasionally the smith may have one help or two. In the upper stories scores of small workshops are supplied with wheel power, and in each of them three, four or five workers and a master fabricate, with the occasional aid of a few plain machines, every description of tools—files, saws, blades of knives, razors and so on. Grinding and glazing are done in other small workshops, and even steel is cast in a small foundry, the working staff of which consists only of five or six men. When walking through these workshops I easily imagined myself in a Russian cutlery village, like Pavlovo or Vorsma. The Sheffield cutlery has thus maintained its olden organization, and the fact is the more remarkable as the earnings of the cutlers are very low as a rule; but, even when reduced to a few shillings a week, the cutler prefers to vegetate on his small earnings than to go as a waged laborer in a house. The spirit of the old trade organizations, which were so much spoken of 25 years ago, is thus still alive."

The Tamarack-Osceola Copper Mfg. Company.

A little over a year ago the parties interested in the Tamarack and Osceola mines on Lake Superior began the erection of a rolling mill for manufacturing copper under the name of the Tamarack-Osceola Copper Mfg. Company. The *Houghton Mining Gazette* in a recent issue gives the following details of the present status of the enterprise:

At the rolling mill a shipment has just been made of 150 tons wire rod. The sheet mill is kept very busy. A new furnace has just been added for the 108-inch rolls and a set of 20 x 60 cold rolls is being erected. Much of the machinery for the new wire mill has already arrived on the ground. The engines are expected daily. Steam will be supplied from the rolling-mill boilers, to be conveyed through an overhead pipe. It looks now as if it would only be a matter of a short time when the wire mill will be ready to start up for active work.

The work of erecting the walls for the new smelting buildings is completed, and the roof, which is to be of iron, is being erected. The buildings, of which there are two, set back from the shore of the lake some little distance, the nearest one being about 250 feet distant from the projected dock line and parallel to the same, leaving plenty of room for a third building. They are built of stone taken from the quarry west of Hancock, their dimensions being 80 x 130 with a height of 20 feet to the eaves. At present they will contain five furnaces, three being placed in the one next to the lake and two in the other. The furnaces, boiler plant and steam pipes will be placed during the winter, the furnaces being somewhat larger than any heretofore used in the Lake Superior district. The cupola building will not be erected until spring. Stone for the building of the same is, however, on the ground. The works are so arranged that they may be duplicated at any time upon the opposite side of the spur track, which runs from the main line of the Hancock and Calumet Railroad to the rolling mill, which allows for the lay-out of six furnace buildings in all. The smelting department of the company will be under the charge of Mr. W. F. Robertson, of Montreal, formerly in the employ of the Orford Copper Company, of New York, and later engaged upon furnaces in Spain. The company started in on the work of erecting their new buildings late in the season, but have been particularly fortunate as to weather.

Gem Furnace.—John W. Hoffman, Philadelphia, receiver of the Shenandoah Iron Company, who built the Gem Furnace at Milnes, Va., has issued a well-written description of the ore property of the company, which is now being offered for sale. A letter is also printed from A. C. Kroman, manager of the furnace, who suggests certain improvements chiefly in the direction of washing the ore from certain banks, and in the direction of lowering the bosh of the furnace. With the improvements thus suggested carried out, he states that iron can be made at the following figures:

$\frac{1}{4}$ ton purchased ore @ \$2.75.....	\$1.37
$\frac{1}{4}$ ton own ore @ \$1.75.....	3.06
$\frac{1}{4}$ ton coke @ \$5.....	3.37
1 ton limestone @ 50¢.....	.50
Labor.....	2.00
Oil, grease, waste, tools and lamps.....	.50
Management, office expenses.....	.37

Total cost at furnace.....\$11.17

He states that the furnace would average 125 tons of iron daily.

The Lake Erie Iron Company, of Cleveland, Ohio, will erect a furnace with working hearth 7 x 14 feet, for heating iron for the 9-inch train.

Legal Decisions.

WATER COURSES.—DEFECTIVE SUPPLY FOR MILLS.

H. in operating his mill had a full supply of water from the stream it was on for nine months in the year, but for the remaining three months there was a great scarcity, and he had constructed a reservoir which could not be filled except by the flowing of the stream for three or four days. In the dry season H. would use the water from the reservoir when it was full, and then resort to the steam-power he had until the reservoir became again full. By taking this course H. deprived the mill-owners below him on the stream of the accustomed flow whenever he turned the water into his reservoir; and when he used the water the ponds below, being small ones, were quickly filled, and much water was wasted over the dams. The previous owners of H.'s mill used both steam and water in the dry season, and so permitted the stream to run undisturbed. M., one of the mill-owners below, being unable to get any redress from H., brought a suit to enjoin him from preventing the usual flow of the stream, and the Supreme Court of Errors of Connecticut, in deciding the case—*Mason vs. Hoyle*—on appeal, in favor of M., through Judge Loomis, said: "The rule that now obtains in all jurisdictions, as recognized by all the authorities, is that the use made by mill-owners of a stream must, in relation to other mill-owners on the same stream, be a reasonable use. Whether the use be reasonable must depend less upon any general rule than upon the particular circumstances of the case. But there are certain conditions essential to a reasonable use so long recognized by common consent, or so obviously just, that we may safely generalize with regard to them. The use must be as near as possible an equal use, or rather an equal opportunity to use. Every owner improving a mill privilege has a right to consider the law as protecting him against any unfair use by any other owner who may establish a mill above him. The term 'unfair use' is the equivalent of 'unreasonable use.' The defendant insists that we cannot consider the fact that he has steam power in his mill in determining this controversy, but we differ from him, as we are of the opinion that with the proper use of this power he can get a reasonably advantageous use of the water-power, and let the stream run on. Besides, the immemorial local custom down to H.'s time to let the water go on unimpeded to the mills below has an important bearing upon the question here. And there remains the further significant element in the case, that the benefit to defendant is much less than the damage to plaintiff in stopping the usual flow; for while a full reservoir will run the former's mill but five hours, the latter is interrupted in the use of his mill for about as many days. The injunction must be granted; otherwise the whole beneficial use of the stream will be absorbed by the defendant."

SUNDAY LAWS.

H. was indicted and convicted for working on Sunday, in violation of the statute forbidding any labor on Sunday. His offense was operating his ice factory on the first day of the week. It appeared on the trial that the closing of the factory from midnight on Saturday to midnight on Sunday would require, on Monday, the reduction of the temperature throughout the entire day (24 hours) before any ice could be drawn, and that then the first ice drawn from the molds would be spongy and unvaluable. The machinery is very sensitive to the heat of the sun, and, during the heat of the summer, the temperature in the brine-vats will rise from 16° to 20° in a day, and it requires more time and labor

to recover a degree above 10° than below. The case on appeal—*Hennersdorf vs. State*—was decided, by the Court of Appeals of Texas, in favor of the defendant below, on the ground that he could work the factory on Sunday as a work necessity, which was provided for under the law. Judge Hart, in the opinion, said: "It will not do to limit the word 'necessity' to those cases of danger to life, health or property, which are beyond human foresight or control. On the contrary, the necessity may grow out of—or, indeed, be incident to, a particular trade or calling, and yet be a case of necessity within the meaning of the act; for it is no part of the design of the act to destroy or impose onerous restrictions upon any lawful trade or business, and hence it has been held, in a sister State, under a statute like our own, that it is lawful to keep a blast furnace at work on Sunday, because it is a work of necessity. It is evident that the work of the defendant here was a work of necessity, and the conviction must be reversed."

SALE—TENDER OF GREATER AMOUNT OF GOODS.

An iron company offered P. some nut and bolt shop scraps, saying that they had 30 or 40 tons to sell, and he offered 87½ cents per hundred for the iron delivered at his wharf. This offer was accepted a day later, and immediately the company carried to the wharf 53½ tons, and tendered the cargo to P., who declined to take the amount bought, on two grounds: first, that it was not iron contracted for; second, that a tender of 53½ was not a tender in fulfillment of a contract for 30 or 40 tons. A judgment was recovered by the company, the court below having instructed the jury in their favor. The case—*Perry vs. Mount Hope Iron Company*—on appeal to the Supreme Court of Rhode Island, was adjudged in favor of the defendant below—Perry. The Court, in the opinion, said: "The contract for the sale of 30 or 40 tons of iron would naturally be understood to mean a contract between 30 and 40 tons, or at most for a quantity not much exceeding 40 tons. Fifty-three tons is so much more than 40 tons that we do not think the jury were warranted in finding that Perry agreed to purchase that amount. The cases cited by the defendant (Perry) show that, as a general rule, the buyer is entitled to refuse the whole of the goods tendered if they exceed the quantity agreed on, and the vendor has no right to insist upon the buyer's acceptance of all of the goods tendered, or upon the buyer selecting his purchase out of a larger quantity delivered."

Copper Stocks in France.—The *London Economist* prints the following table showing the accumulation of copper in tons since the commencement of the year, the returns being those for the end of each month:

	Harve.	Rouen.	Dunkirk.	Paris.	Other places.	Totals.
January.....	22	1,016	.....	.....	362	1,400
February.....	26	965	.....	.....	463	1,454
March.....	712	966	.....	.....	.....	1,678
April.....	1,144	966	.....	.....	.....	2,110
May.....	1,144	966	.....	.....	26	2,136
June.....	3,531	1,021	.....	.....	26	4,578
July.....	6,731	4,500	1,169	498	26	12,924
August.....	10,805	5,312	1,169	1,001	102	18,389
September.....	18,265	5,312	1,169	1,009	107	25,862

It will be observed that a considerable part of the growing copper stocks is being transferred to France.

The total tonnage launched on the Clyde for the past ten months was 223,953 tons, exceeding greatly the total for the same period in the three preceding years, although it falls short of the production of

the years when shipbuilding was at its greatest prosperity. This year's total is 60,000 tons in excess of 1887, over 75,000 tons in excess of 1886, and 71,000 tons in excess of 1885. And it exceeds the total output for these three years by 38,600 tons, 51,500 tons and 31,500 tons respectively. The total production for the present year is estimated at 260,000 tons.

A Great Silver Mine.

The Granite Mountain mine, of Montana, ranks among the great silver mines. The total gross product of the property from 1885 to July 31, 1888, has been 7,606,515 ounces of fine silver, 3185 ounces of fine gold, and 537 tons of ore shipped to smelter, from all of which \$7,776,340 have been realized. To July 31 the expenditures were as follows:

For mills, buildings, roads and other permanent improvements, lands, ranches, and lode claims and water rights, say.....	\$592,500
For unconsumed supplies, as per inventory.....	185,000
For labor and supplies consumed, say.....	1,464,264
For bullion and smelting ore, freight, and refining charges, say.....	214,167
For miscellaneous expenses, including home department, say.....	108,000
For 43 dividends returned to stockholders.....	4,800,000
Total disbursements, say.....	\$7,363,931
Cash on hand in St. Louis and in Montana, and bullion en route and sold, July 31.....	412,409

From the above it will be seen that the dividends returned to stockholders are about 62 per cent. of the gross output, leaving as an extra asset the value of the plant and unconsumed supplies, which were taken in inventory July 31 at \$581,579. In the spring the new 90-stamp mill will be in operation. It is intended to utilize in three mills (aggregating 160 stamps) a larger proportion of low-grade ore than heretofore, and hence the increased output of bullion will not be in proportion to the increased milling capacity. By second-class or low-grade ore is meant ore assaying under 75 ounces per ton, of which there are large quantities.

Carriers and Shippers.

Each of the European Continental powers has provided for some form of advisory railroad commission through which the railway managers and representatives of the commercial, industrial and agricultural interests are brought together for purposes of conference on disputed questions affecting rates and service. Arguing in favor of the adoption of a like system in the United States, the *Commercial Bulletin* says: "The Interstate Commerce law has discouraged conferences between carriers and individual shippers. Never before have such consultations been so difficult or so unproductive of good results. The law aims at the establishment of general principles and inflexible rules, and leaves as little room as possible for discretionary action by the carrier in deference to the necessities of individual shippers or localities. By discouraging this individual correspondence and consultation the law has increased the necessity for conferences on a broader scale. It has compelled commercial bodies throughout the country to take up freight-rate questions, to study the transportation situation and to champion the cause of shippers. It has had the effect of bringing new commercial bodies into existence for this very purpose. A large proportion of the cases brought before the Interstate Commerce Commission originate with such bodies, and railroad managers have been compelled to recognize the necessity for dealing with such organizations as they previously did with individuals under the old system of secret agreements, &c."

THE WEEK.

The National Board of Trade, President Frederick Fraley, of Philadelphia, in the chair, held a two-days' session in Chicago last week and adopted resolutions in favor of the suspension of silver coinage, granting subsidies to American steamships for carrying the mails, strengthening our coast defenses and favoring the restriction of immigration. The next annual convention will be held in Louisville.

The associated taxpayers up town are solidly arrayed against building the proposed Quaker Bridge dam, which they say would cost \$100,000,000 and prove worthless.

Progress is now being made on the abutments and piers of a large suspension bridge, which will cross the Hudson River from Anthony's Nose, above Peekskill, to Fort Clinton. The bridge is being built by the Hudson Suspension Bridge and New England Railway Company, and is intended to form a connecting link between the New England Railway system and that of the West, with the purpose of opening up to a greater degree the New England market for the coal fields of Southern New York and of Pennsylvania. The direct connection will be with the New York, Lake Erie and Western and indirectly with the Lehigh Valley and other roads and the Pennsylvania system. General Serell is the engineer-in-chief of the bridge, which, it is claimed, will be larger than the Brooklyn Bridge. The span of the latter will be exceeded by 25 feet, according to statements of representatives of the company. The wire to be used in the manufacture of the cables, it is said, will be of greater strength, individually, in proportion to their section, than any heretofore used, being equal to a strain of 5400 pounds each. Sixty-one of these strands will be combined in a cable. The cables are said to be of Roebling & Sons' manufacture.

The Detroit Tunnel Company has been incorporated, with a capital of \$1,500,000, with the object of building a tunnel beneath the Detroit River for railroad purposes, the expense for the entire work to be divided equally with a Canadian company, each organization to build up to the intermediate national boundary line. Tracks will run from the tunnel to the northern end of the city and there connect with every railroad entering Detroit. The company will lease its tracks and tunnel privileges to the railroad companies.

Mr. Eastman, whose shipments of live cattle from New York to ports in the United Kingdom amount to several millions of dollars annually, is about to retire from business with a handsome fortune. He is a native of New Hampshire and commenced as a longshoreman.

Chief Engineer Green of the Dock Department has made an examination of the shore line on the North River side, with the object of extending piers to adapt them to the increased length of steamships in the European trade, and has decided to apply to the Legislature for such a modification of the water-front as will permit the addition of 50 to 100 feet to many of the piers between Castle Garden and pier No. 47, near Christopher street. By this means the department hopes to retain such a portion of the commerce and business of the harbor as naturally belongs to it as the business center.

The Silk Association of America estimates the annual value of the silk goods manufactured in the United States at \$45,000,000. The invoice value of the manufactures of silk imported last year was \$33,350,928, which, with the duty added, would be about equal to the value of the

domestic manufactures. Consul Seymour, at Canton, China, reports that the silk production will, this year, fall off over 50 per cent. owing to the floods, and that Europe and America will not get more than 10,000 bales, instead of 21,000 usually sent.

A struggle between the New Jersey Central and Lehigh Valley Railroad Companies for right of way in Jersey City at a point known as "the Gap" has caused the interposition of the local authorities. One of the contestants sunk several stone-laden canal boats, as a foundation for the road-bed.

A State commission to consider the project of establishing industrial schools in Pennsylvania met in Pittsburgh last week. Dr. Atherton, the president, who has made a tour in Europe to gather information respecting the workings of the system there, said the commission will resist any measure looking toward the teaching of trades in the public schools, but it will insist that the State incorporate manual training as an integral part of the common school system and provide for a teaching force. After discussion, resolutions were adopted in harmony with these views.

A violent explosion of gas occurred on Friday morning in the large dry-goods store of Waller & Welsh, in Yonkers, caused by a defective main in the street. The gas was ignited by a lamp introduced by plumbers in their search for the leak, and instantly the store was in flames. The damage is estimated at \$14,000.

The Treasury Department has authorized the allowance of drawback on exported Hungarian nails manufactured at South Hanover, Mass., wholly from imported steel shearings or steel plate scraps. The drawback is to be equal in amount to the duty paid on the imported material, less the legal retention of 10 per cent.

The flouring mills at Minneapolis are shutting down on account of the unprofitable relative position of the flour and wheat market, there being a tendency to a glut of the former, while the prices of grain are supposed to be abnormally high. St. Louis and Milwaukee mills are taking like action.

The Baltimore and Ohio Railroad Company are said to have formed a new scheme for getting through to New York by means of connections with the North Pennsylvania Railroad and the Reading's New York line.

The first annual report of the first railway in China has been issued. The line runs from Tongsan to Yungchong, in the province of Chihli, in North China. Its length is about 27 miles, and it owes its existence to the Kaiping coal mines. The net profits were \$24,500. A branch is being constructed to Tientsin, and it will soon be extended to Peking.

The State Department has been informed of the passage of a law by Ecuador allowing foreign vessels to enter their coasting trade.

Congress convenes on Monday, December 3—ten days hence.

A cable will be substituted for horsepower by the Third Avenue Railroad Company, a majority of property owners on the line of the road having approved of the change. The proposed cable road to extend south to the City Hall from 125th street is promised within a year.

In the United States Circuit Court at Boston, 14th inst., the patent safety-valve suits against the cities of Haverhill, Lynn, Salem, Newburyport, Chelsea, Somerville, Lawrence, Cambridge, Fall River, Taunton and New Bedford, brought by Ruel C. Philbrook and others, were decided in

favor of the defendants under instructions by Judge Colt. The decision was rendered on the ground that the State statute of limitation applied to patent suits. In these cases action was brought more than six years after the time when the right to do so began.

The Boston boot and shoe trade had a banquet last week at which addresses were delivered by ex-Governor Claflin and others, showing that notwithstanding the large increase in shoe manufacturing in the West there has been a steady gain in the East. There are about 160,000,000 pairs of shoes made annually in the United States, and of these 100,000,000 pairs are made in New England. The shoe jobbing business has increased about fivefold in 30 years. Sales in Boston in 1887 amounted to \$16,000,000.

The expediency, not to say necessity, for fostering the export trade in manufactured cottons is being pressed upon public attention in some quarters in prospect of a glut in the home market when manufacturing in the South shall have become more fully developed. Last year there were 60,000 bales of sheetings, worth \$3,000,000, and 30,000 bales of drillings, worth \$1,350,000 exported to China, and to the other countries nearly as much more, and this in the face of active competition with England and Germany in the same lines of goods and in the face of obstacles to transportation, exchange and insurance that no other manufacturing country had to contend with. Just now the export trade in cottons is rather dull owing to the high prices prevailing in the domestic market. But for the absence of direct lines of transportation this trade would be very much greater, particularly to South America.

The Seward bronze statue, one-half larger than life size, was cast at Chicopee, Mass., and was unveiled at Auburn on the 15th inst.

Startling figures respecting the sugar trust are given "by a prominent member of the trade," to the effect that the people of this country must pay \$30,000,000 more a year than formerly for their sugar, and that just that much more money goes into the coffers of the 11 millionaires who constitute the sugar trust. The very first month the sugar trust was in full working order—in January last—it arbitrarily advanced the price of refined sugar nearly 1½ cents a pound. For instance, in January, 1887, granulated sugar was selling at 5¼ cents a pound, and in January last, the corresponding month, the sugar trust had forced it up to 7¼, a raise of 1½ cents. The following table from a recognized authority, the trade bulletins of Willett & Hamlin, gives the figures which prevailed during each month, as reported from week to week:

1887. Cents.	1888. Cents.
January 5 11-16	January 7½
Feb'y 5 11-16 to ¾	Feb'y 6½ to 7 1-16
March 5 11-16	March 6¾
April 5¾	April 6¾
May 5 11-16	May 6¾
June 5 13-16	June 6¾ to 13-16
July 5 13-18 to 15-16	July 7 1-16 to 13-10
August 5 15-16 to 6½	August 7½ to ¾
Sept 6 7-16	Sept 7½ to ¾
October 5¾ to 6½	October 7½
Nov 6½ to 11-16	Nov 7½

It is seen from the foregoing that the average advance in the price made by the sugar trust has been more than 1 cent a pound.

The Manhattan Elevated Railroad last year earned \$8,673,871, and the net earnings were \$3,472,821—increase, \$340,609. Passengers carried, 171,529,789—increase, 12,500,000.

The Minnesota State Board of Prison Inspectors are seeking work for convicts, and "were thinking somewhat seriously of

manufacturing bolts, but found upon investigation that the price of that article is regulated by a trust, with headquarters in New York, and no individual or firm can purchase bolts of the corporation without stating that they have bought of no outside concern since ordering their last consignment." The desire is to avoid antagonism with the products of free labor.

It is claimed that the Pacific Mail Steamship Company stand very little chance of getting any subsidy from the incoming Administration. The fact that the company are building one or more boats in foreign ports will, it is said, prejudice their case.

The latest war-ship launched for the Italian navy is in size larger than the Duilio, hitherto the most formidable in the fleet, being 387 feet in length, over 13,000 tons register and 19,500 horsepower. She is expected to attain a maximum speed of 19 knots.

The total cost of the postal service of the United States during the last fiscal year was a little more than \$58,000,000, or about \$5,500,000 in excess of the receipts. This deficiency is owing mainly, it is said, to the great extension of the free-delivery service under a modification of the old law and the increase of railway mail transportation. Statistics are given showing that in the cheapness of postage, the number of post offices, extent of mail routes, miles of service performed, postal revenue and postal expenditure, and number of letters and other pieces of mail matter transmitted in the mails, the United States is now conspicuously ahead of every other nation in the world. The statistics of letters, &c., transmitted during the year, which are the first accurate statistics of the character ever published by the Department, are as follows:

Letters mailed.....	1,769,800,000
Postal cards mailed.....	372,200,000
Newspapers and periodicals mailed.....	1,062,100,000
Pieces of third and fourth-class matter.....	372,300,000
Total.....	3,578,000,000

The number of pieces mailed per capita upon the basis of population shown by the last census is 71.

Land speculation rages in Australia, but is discouraged by banking institutions. Transactions were pending in Melbourne at last advices involving an aggregate of at least \$60,000,000.

Hon. Arthur A. Brigham, of Marlboro, Mass., has accepted the professorship of Agriculture in the Imperial Agricultural College at Sapporo, Japan.

Everything in the Argentine Republic is booming at a rate that dazzles even those who are accustomed to extraordinary buoyancy in business affairs. Buenos Ayres papers speak of a wool clip that will exceed that of last year by at least 50,000 bales, and the wheat farmers are expecting a gigantic crop. Contemplating the situation the *Standard* says: "What with the expectations of an extraordinary clip and crop, and the great improvement in prices in the European consuming markets, it need not be wondered at if people in the Plata are preparing for a golden year in 1889; and, verily, everything promises such development at the present moment that we wonder what magical turn we shall see in River Plata affairs next year. We may witness exchange at 48½ and a steady flow of gold from Europe, and on its heels a steady appreciation of paper and gradual return to specie payments. While we mention the possibility of a return to specie payments on the strength of a good season and a rising exchange market, the great majority of financial authorities in this city are convinced that gold will go to 200 next year, in view of the sweeping

avalanche of paper money that is expected in 1889. In this respect, we may add that 60,000,000 more paper money will be issued next year under the provisions of the free banking law of Dr. Pacheco." At present paper money in the Argentine Republic is steadily depreciating, and at the same time the credit of the country is suffering in Belgium and Paris to such an extent that further loans are negotiated with extreme difficulty, or fail altogether.

The Nicaragua Canal Company have been incorporated by a special act of the Vermont Legislature. The representatives of the company stated to a committee that all the necessary concessions had been granted by the Costa Rica and Nicaraguan Governments, and that the work of building the canal will commence at once. Two expeditions sent out by the United States Government have already surveyed the route, and the cost of construction is estimated at \$65,000,000. Three hundred thousand dollars have already been spent in the preliminary work. The president of the company is Hiram Hitchcock, one of the proprietors of the Fifth Avenue Hotel. Judge Charles P. Daly is one of the incorporators, and H. L. Hotchkiss, the Wall street broker, is treasurer and the active man in the enterprise.

Iron shipbuilders are receiving more encouragement, although their yards are already well occupied. The United States and Brazil Line are preparing plans and specifications for building two fine steamships at once, and the Mallory Line have contracted for a new steamship, a four-decker over 300 feet long, for the Gulf and coastwise service.

The Adams Express Company promptly reimbursed the United States Treasury for the amount of \$1400 in silver coin abstracted from a shipment of \$12,000,000 while in transit from New Orleans to Washington City.

The big cities of Japan are in the Island of Hondo, which lies south of the Yezo, and which is several hundreds of miles long and at places 200 miles wide. Here are the chief agricultural regions, the manufacturing districts and in short Japan. Tokio itself has 1,000,000 inhabitants and it lies in the center of the empire. Its distances are more magnificent than those of Washington and its size is about that of Philadelphia. Three hundred miles west of Tokio is Osaka, which has about as many inhabitants as Chicago, and a very few miles off from this is Kiota, which was formerly the capital of the empire, and which boasts as many people as Washington, Kansas City or Cleveland. Osaka is now the New York of Japan and Kiota, with its temples, may be called the Mecca of the empire. Nagoya and Kanazawa are cities each having over 100,000 population, and there are a dozen other cities in Japan, each of which contains from 40,000 to 80,000 people.

The Wells College Building, at Aurora, N. Y., recently destroyed by fire, will be rebuilt at a cost of \$100,000. The building will surround a court containing a fountain and a tower, which latter consolidates the plumbing of the entire structure.

James R. Hosmer, United States Consul-General to Guatemala, reports that Guatemala is enjoying greater commercial prosperity than for ten years past. The coffee crop this year will amount to 500,000 quintals, or 50,000,000 pounds. He recommends a treaty with Guatemala like that with the Hawaiian Islands regarding the duty on sugar.

Haytian commerce is temporarily destroyed by the revolution now in progress. All the ports are completely blockaded, so that merchants in New York can neither receive nor fill an orders until the blockade

is raised. The ports referred to are Cape Haytien, Port de Paix, Gonaives and Saint Marc. A letter received in this city from Port au Prince, where the wildest confusion prevails, says: "Both parties are partial to assassination. General Telémaque was basely assassinated. Were it not for this he certainly would have been elected, and there is no doubt but that he would have served the people faithfully. Port au Prince, Petit Gôave, Léogane, Jeremie, Aux Cayes and Miragoane alone are in favor of General Légitime, the rest of the country having declared for General Hippolyte." At least two American vessels have been seized, and such as are permitted to sail are compelled to leave without cargoes.

Perry Belmont has been appointed Minister to Spain to succeed Jabez Curry. Mr. Belmont, as chairman of the Committee on Foreign Relations in the House, has had much experience.

The well-known suit of J. H. Chandler vs. the Calumet and Hecla Mining Company was decided in the United States Court on 15th inst. against the plaintiff, Judge Severense holding that the mining company's title is good.

The Dominion Cabinet is stirring itself in furtherance of the proposed Pacific cable from New Zealand to British Columbia.

A royal car for the King of Portugal, to be reconstructed on arrival at destination, has been built at the car works in Springfield, Mass.

The annual report of the United States naval constructor shows that \$885,349 was expended during the last fiscal year in the purchase of tools, repair of ships, &c. Tools are now being delivered to the New York and Norfolk yards, and the chief constructor says that we will soon be in possession of two yards well equipped for building steel and iron vessels of war of every size and type. The payments made on account of vessels building under contract up to October 31 last aggregate \$3,266,195. Five vessels were condemned and sold during the year. The present strength of the navy and condition of the vessels is stated as follows: Five double-turreted monitors, awaiting completion; two belted cruisers, preparing ways; 13 single-turreted monitors, in ordinary; 23 unarmored steel and iron vessels, four of which are in commission, 11 building, two repairing, five on station and one in ordinary; 28 wooden steam vessels, nearly all on station or undergoing repairs, and 11 iron and wood steam tugboats. The report of Chief Wilson shows that the expenses of the navy for the past year were \$46,662,000. The estimated expenses for the next year are \$46,364,525, of which \$3,540,000 is for new cruisers.

The greatest railroad enterprise now in progress or in contemplation is the Mexican Pacific Railroad, from San Diego, Cal., along the coast to Mazatlan, and thence to the City of Mexico. The line will be 1900 miles in length, and, when completed, it will begin a new era of development for the great region it is designed to traverse. To San Diego it will be of especial importance, enabling that city to draw upon the rich mines of semi-anthracite coal in Sonora, and upon other natural wealth in the interior of Mexico. From San Diego to Mazatlan the road will run along the coast through a well-peopled country, abounding in ebony, mahogany and other valuable woods. The first part of the railroad to be completed is from Mazatlan to Guadalajara, a distance of 375 miles, and thence direct to the City of Mexico, a further distance of 280 miles. Guadalajara has now more than 100,000 inhabitants, and Mazatlan 25,000.

MANUFACTURING.

Iron and Steel.

Claire Furnace, owned and operated by the Claire Furnace Company, Limited, at Sharpville, Pa., is at present turning out more iron than ever before in its history. For the week ending November 11th, its output was 1006 tons Bessemer iron, an average of nearly 144 tons per day, or 6 tons per hour. This is certainly a good record for a furnace which measures 15 feet at the bosh and 75 feet in height. The consumption of fuel was 2075 pounds of coke for a gross ton of iron made. Number of hands average about 89 per day. Its maximum output was 310 tons in 48 hours.

No. 2 blast furnace of the E. & G. Brooke Iron Company, Limited, at Birdsboro, Pa., which has been idle since January last, was put in blast on the morning of the 14th inst.

P. L. Kimberly & Co., proprietors of the Atlantic Iron Works, at Sharon, Pa., have recently voluntarily advanced the wages of their laborers 10 cents per day, while the fillers at the blast furnace received an advance of 15 cents per day.

Mount Laurel Furnace, of the Clymer Iron Company, at Temple, Berks County, Pa., which has been idle for some months, was blown in on Friday, the 16th inst.

All departments of the plant of the Belmont Nail Company, at Wheeling, W. Va., are in successful operation with the exception of the tack factory, which is idle for an indefinite period.

During the month of October, just closed, the plant of the Wheeling Steel Works, at Wheeling, W. Va., produced 6834 gross tons of Bessemer steel.

A number of the mills in Pittsburgh suffered no little inconvenience last week by a shortage in the supply of natural gas. The shortage was only at the mills supplied by the Philadelphia Company, and was caused by the delay in laying the 36-inch connection with the Grapeville field, where the company have 12 new wells anchored, ready to be turned on as soon as the necessary connections can be made, which will probably be during the present week. The American Iron Works of Jones & Laughlins, Limited, were partially closed down for a few days owing to the insufficient supply of gas, but have since resumed operations in all departments.

The rumor that Mr. John Walker, who recently resigned the chairmanship of Carnegie, Phipps & Co., Limited, at Pittsburgh, would purchase and put in operation the Clinton Rolling Mill of Graff, Bennett & Co., in that city, is pronounced by that gentleman to be without foundation.

M. V. Smith, metallurgical engineer, of Pittsburgh, is placing a number of Smith gas-producers in the works of the Hartman Steel Company, Limited, at Beaver Falls, Pa. As soon as the producers are completed the firm will manufacture fuel gas and will give up the use of natural gas entirely.

A press dispatch from Youngstown, Ohio, under date of the 15th inst., says: "Sheriff Walker to-day levied on the entire plant of Brown, Bonnell & Co., to satisfy 54 executions in favor of as many creditors. The executions were issued five years ago, but no levy was ever made, an arrangement being made with the creditors to allow the concern to run in the hands of a receiver. It is not the present intention to force a sale of the property. The levy was made simply to prevent the executions from becoming dormant. The

total amount of the executions is \$800,000, distributed among many individuals, firms and banks and other corporations. The levy will not interfere in the least with the operation of the big mills, the proceeding being merely a formal matter.

The new blast furnace of the Moorhead-McCleane Company, of Pittsburgh, was put in blast on Friday, the 16th inst. This furnace was erected to take the place of their old furnace, and will turn out about 260 tons of pig iron per day.

All departments of the steel plant of the Bethlehem Iron Company, of Bethlehem, Pa., which have been idle for several weeks, resumed operations on Wednesday, the 14th inst.

The adjourned auction sale of the Fort Pitt Boiler Works, of D. W. C. Carroll & Co., Limited, of Pittsburgh, was held in that city on Tuesday, the 13th inst. The property is situated at the corner of Short street, Liberty and Third avenue, and is covered by a mortgage, which, with taxes and interest in arrears, will amount to \$37,000. It was bought for Carnegie, Phipps & Co. for \$21,000. By the terms of the sale the purchasers assumed the debt of \$37,000 against the property, which, with the \$21,000, brings the price up to \$58,000. The property, two years ago, was appraised at \$150,000. A member of the firm that purchased the plant stated that it had been bought to satisfy a claim they had against it, but that the firm had no idea of operating the works.

Zug & Co., Limited, proprietors of the Sable Iron and Nail Works, at Pittsburgh, will shortly commence the erection of 12 new puddling furnaces at their plant.

The 32-inch beam mill of Carnegie, Phipps & Co., Limited, at Homestead, Pa., has been placed on single turn and will remain in that condition until enough orders are received to place in on double-turn. The large slabbing mill is at present employed to its utmost capacity.

The Prospect Rolling Mill Company, of Cleveland, were organized August 1, L. Levi being treasurer; A. A. Fuller, secretary and manager; W. F. Loyd, superintendent. They will make merchant bar iron, and are putting in six puddling furnaces. These will run double turn, November 20, and will make 40 tons finished iron per day.

It is rumored that negotiations have been concluded for the erection of a furnace at Leeds, Ala., with 120 tons daily capacity. Henry Ellen coke is to be used as fuel. H. F. DeBardeleben, B. F. Roden and J. F. Johnson are said to be at the head of the enterprise.

Furnace No. 2 of the Lehigh Iron Company, at Aineyville, Pa., is being prepared for blast, and will be blown in shortly. No. 1 furnace, of this company, resumed operations a short time since.

The Reading Iron Works' steam forge on North Eighth street is a busy establishment just now. A 3-ton hammer, which has not been in operation for about a year, will be started up next week. This will give employment to eight men who are now on the night turn. Four hammers will then be in full operation, with every indication that they will be kept going for months to come.—*Reading (Pa.) Times.*

The Bethlehem Iron Company, of Bethlehem, Pa., have called a meeting of the stockholders to be held on the 28th inst., for the purpose of voting on the question of accepting the provisions of the Constitution of Pennsylvania, of 1874, and also of accepting the provisions of the Act of Assembly, entitled, "An Act to Pro-

vide for the Incorporation and Regulation of Certain Corporations." The main object of the proposed acceptance of the constitution and corporation act, at this time, is to enable the company to increase their capital stock under the provisions of said act.

No. 6 furnace of the Crane Iron Company, at Catasauqua, Pa., was put in blast on Wednesday, the 14th inst., after an idleness of several months, during which time it has undergone thorough repairs. All the furnaces of the above company, five in number, are in successful operation.

Mr. B. G. Clarke, president of the Thomas Iron Company, in the Lehigh Valley, states that the improvements in fuel consumption and by the use of richer ores have brought about a saving in the cost of \$1.70 per ton.

Machinery.

L. S. Allison, proprietor of the Hazleton Iron Works, at Hazleton, Pa., has recently purchased and put in operation the plant of the Minersville Iron Works, at Minersville, Pa. The plant is composed of a machine shop 155 feet long and 70 feet wide, a foundry 70 x 80 feet, containing two cupolas, a forge 150 x 50 feet, and a boiler shop 70 x 35 feet. The works will be run on furnace machinery, castings, rolling mill machinery, mine locomotives, mine pumps, hoisting engines and steam shovels, and all kinds of mine machinery and castings with structural work and forgings. Employment will be given to about 150 men.

William Tod & Co., engine builders, of Youngstown, Ohio, have among new orders the ironwork for the new blast furnace of the Brier Hill Iron and Coal Company at that place, and also have an order for a 200-horse-power Porter-Hamilton engine for R. Glover & Sons, of Vincennes, Ind.

The Kansas City Radiator and Iron Foundry Company have their office in the Bayard building, Kansas City, Mo., and their works are located at Argentine, Kan. Their foundry, machine shop and store-rooms cover about 2 acres. The buildings are frame, covered with corrugated iron, and the works are well equipped with the most improved machinery, much of it designed specially for making the Askins patent radiator. The company publish some very satisfactory tests of the efficiency of this radiator, resulting from recent trials in competition with radiators made by other parties. The corporation was formed November 6, 1887, to operate the plant, which was removed about the same time from Lima, Ohio. It was put in operation in its new location last May. The working force now consists of 85 men, who are engaged daily until 10 o'clock p. m., to keep up with orders received. The general character of their business is shown by the points to which the company have recently shipped radiators. These embrace Philadelphia, to which regular shipments have been made for some time; Seattle, Wash. Ter., to which a carload was sent last week; Ogden, Utah Ter., which also took a carload, &c. The foundry now melts about 5 tons of iron daily. Robert P. McGeehan is president and Joseph Askins manager. The company have a capital of \$200,000.

The Anson G. Wood Mower and Reaper Works, which moved to Chattanooga, Tenn., from Youngstown, Ohio, turned on steam November 1 for the first time. Their buildings, covering 2½ acres, are completed, and the machinery all in. They will employ 150 hands.

In answer to a report that Russell & Co., builders of agricultural machinery, at Massillon, Ohio, had recently made a general reduction in wages, we received the

following advices from the firm under date of the 13th inst.:

There is no truth in this statement. We have not made a cut in the wages of men in any department of our works, and have no intention of so doing. It has been our custom toward the close of every year for the past eight or ten years to readjust prices paid piece workmen. During the past few years we have brought out quite a number of new designs and sizes of engines, both in the stationary and portable line. In our engine department we aim to have our men work on piece work as much as possible. We are unable to put our new work during the first of the year on piece-work basis, as we find it necessary to work for some considerable length of time on this class of work by day before we are enabled to establish a rate. We then establish a rate which we consider fair, but in many cases find we are paying too much or too little, and in order to equalize these matters make it a rule to go through all our piece work (especially in our engine department) toward the close of each year and readjust prices. In many instances we have raised the prices that were paid to the same extent that we have reduced in other cases. We can only add, in conclusion, that none of our men have made any complaint, nor do I believe one could be found that is disposed to make any complaint of the adjustment we have made as to the price to be paid on this class of work.

The Kansas City Car and Wheel Company are operating their new works at Birmingham, Mo., 10 miles from Kansas City, in which they have their main office, located in the Beals Building. Their grounds comprise a tract of 36 acres. Their foundry is quite extensive, being 600 feet long by 100 feet wide, with a melting capacity of 200 tons per day. They employ about 500 men and at present have about 1000 cars under contract, which they are building at the rate of 15 a day. A heavy demand is anticipated next season. C. E. Barrett, formerly of Chicago, is now general manager, having taken charge on the 1st of September. The company is a branch of the Missouri Car and Foundry Company, of St. Louis.

The Kilby Mfg. Company, of Cleveland, Ohio, have the contract for the machinery of the Cable Railway Company, of Los Angeles, Cal. Three of the wheels have the following dimensions: One is 26 feet in diameter, with 56-inch face, one 20 feet in diameter, with 50-inch face, its weight being 60,000 pounds, and one 24 feet in diameter, 60-inch face, weighing 80,000 pounds. The Kilby Mfg. Company are crowded with engine orders, are working day and night force, employing 400 men.

The Diamond Machine Company, of Providence, R. I., received at the Cincinnati Centennial Exposition a silver and bronze medal, both the highest awards for different classes of grinding machines. They inform us that they also received the highest premium on their Galloway die stock.

The City Machine Company, Providence, R. I., have discontinued business permanently and are now offering their plant and machinery for sale.

W. C. Jones, late superintendent of the Universal Radial Drill Company, of Cincinnati, and W. S. Rogers, formerly consulting engineer for the same firm, have associated themselves in business in that city as mechanical engineers, with Jno. G. D. Mack, of Terra Haute, as junior member of the firm. They will make a specialty of designing and building special machinery and machine tools, and assisting inventors in patent office work. Messrs. Jones & Rogers were the original inventors and constructors of the universal thread-chasing device and gearing that attracted such attention at the late exposition in Cincinnati. They will eventually have their own shops.

The foundry and machine department of the Harrisburg Car Mfg. Company, of Harrisburg, Pa., report a large number of sales within the last six weeks. Among

these the Ide engine takes a prominent place, the sizes which were sold ranging from 30 to 150 horse-power. Gas plants, Weitmyer furnace settings and ordinary tubular boilers also are well represented in the list of sales.

The Davenport Foundry and Machine Company, of Davenport, Iowa, are quite busy getting out ten fly-wheels, 14 feet diameter, weighing each about 18,000 pounds; ten large disk cranks and couplings, &c., for the Davenport Water Company; also a large lot of castings for the Hawkeye Electric Mfg. Company, who are locating at that place. They will have their works in operation December 1.

The new works of the St. Joseph Pump Company, St. Joseph, Mo., consists of a factory building 50 x 120 feet, three stories high, with a two-story addition, 75 x 50 feet; warehouse, three stories, 50 x 100 feet, dryhouse, varnishing and galvanizing buildings, engine-house and other structures.

Messrs. Warren Webster & Co., 491 North Third street, Philadelphia, Pa., report a large number of orders for their Vacuum feed-water heater and purifier.

The St. Joseph Pump Company, of St. Joseph, Mo., now occupy a new brick building, 50 x 120 feet, consisting of three stories and a basement, which they erected this year. The first floor is devoted to office purposes and the wood-working and iron-working machinery and the shipping department. The second and third floors are used for painting, finishing and storage. The first floor is heated by overhead steam-pipes, and the second and third floors are supplied with steam radiators. The machinery is operated by a 60 horse-power cut-off Ide engine. An elevator runs from the basement to the top floor. The company have a galvanizing department in a separate building, 25 x 60 feet, built of frame. In this department they not only do their own galvanizing, but take work for outside parties. They claim to have the largest dipping kettle west of Chicago, and galvanize plain black sheets, coal hods, light castings, &c. They employ about 35 men. Most of their pump-work is done by special machinery, designed and adapted to meet their requirements. Their special product is the Perfection water elevator and purifying pump. This is a modification of the chain pump, the water being hoisted by small buckets attached to an endless belt made of flat steel links. It is very simple in construction and can be put up in a very minute, having no wooden or iron tubing to connect and no valves or cylinder plungers. The buckets are made by double seam flanging and require no soldering, their form of construction making them more rigid and less liable to split open than if made in the usual way. The cup is also fastened to the wire link by the double flange, so that the link cannot spring open. The complete chain and bucket are galvanized after construction. Three sizes of elevators are made, with cups of different sizes to correspond. The smallest, for family use, draws a $\frac{1}{2}$ -pint stream, while the largest is of 125 per cent. greater capacity.

Hardware.

F. H. Foster Mfg. Company, Florence, Ala., are making preparations to manufacture an extensive line of builders' hardware. Their factory which is now being constructed will consist of nine buildings, 40 x 100, 32 x 30, 40 x 100, 30 x 50, 50 x 150 and 40 x 60 feet, and three small buildings. It is estimated that they will employ from 200 to 300 hands.

The Newcastle Wire Nail Company, of Newcastle, Pa., are building a large ware-

house adjacent to their works in which to store nails.

A license to incorporate under the laws of Illinois has been granted to the Leroy Crucible Steel Horse and Mule Shoe Company, East St. Louis. The authorized capital is \$200,000. The incorporators are J. Leroy, Selma Watson, William Willis and W. C. Morgan.

The W. S. Tyler Wire Company, of Cleveland, Ohio, have completed their new storage warehouse 52 x 102, four stories. This company are making a specialty of galvanized poultry netting.

W. G. Avery, manager of the W. G. Avery Mfg. Company, Cleveland, Ohio, and patentee of the Avery Seamless Elevator Bucket, has just had another patent granted him for an elevator bucket which will cost less to manufacture while being, it is claimed, equally good.

Miscellaneous.

The new works of the Minnesota Car Company, at Duluth, Minn., are being pushed to completion as fast as possible. Construction will not be suspended during the winter, and the works will be ready for operation by spring. The company propose to begin the delivery of completed cars by July next. The first building east of Central avenue is the paint shop, 56 x 360 feet. To the east of the paint shop is the main erecting car shop, 93 x 526 feet. Fifty-six feet further east is the foundry, 60 x 300 feet. This building will be of solid stone and brick. On its south end will be a wheel pit, 50 x 60 feet, and on the north end the pattern-room, 30 x 60 feet. On the west side will be the boiler-room, 26 x 35 feet. South is a lean-to, which forms part of the foundry building, 18 x 100 feet. Connected with this lean-to is the brass foundry, 18 x 20 feet. On the east side of the foundry, both at the north and south ends, are core-rooms, each 18 x 20 feet. East of the foundry is the rolling mill, 80 x 161 feet. North of the rolling mill will be the forge building, 70 x 100 feet, and 20 feet away will be the gas producers and boilers, in a building 40 x 100 feet. Through the property tracks connect with the St. Paul and Duluth Railroad.

Perkins & Son, of St. Joseph, Mo., recently closed out their hardware and stove business and purchased the St. Joseph Novelty Works, combining with it their business in the manufacture of Perkins' patent corrugated iron fire-proof shutter. They have added a foundry to make light castings, and will soon begin the manufacture of iron fencing, fire-escapes, cresting and other specialties. They will carry in stock corrugated iron roofing, conductor pipe, &c.

The Topeka Wind Mill Mfg. Company, of Topeka, Kan., make the Topeka automatic self-regulating solid and sectional windmills. They began work March 1st of the present year and have already put out over 200 of their mills, for which they control the territory west of the Mississippi river. The machinery of their plant is operated by a 20 horse-power automatic cut-off engine, and the total capacity of their works is 200 windmills per month. All sizes are manufactured, from 300-barrel tanks down to 5 gallons, and they are either for tops of buildings or towers.

The Cambria Iron Company, of Johnstown, Pa., have purchased the plant of the Dunbar Coke Company, in Fayette County. The property consists of 50 acres of Connelville coking coal under water level, with 10 acres of surface, on which are erected 80 ovens, having a capacity of 50,000 tons a year. There are also dwelling houses for employees on the premises, and engine and boiler house, office, blacksmith shop, tipple and water bank in good order.

The Iron Age

New York, Thursday, November 22, 1888.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Denver Castings Contract.

We print elsewhere a letter relating to Denver cable road contract, written by John H. Piper, addressed to the editor of the *Evening Post*, and the reply which flowed from that fountain head of wisdom. It will be noted that the real issue is dodged. As we stated when first we referred to the matter, it is evident, by even a superficial computation, that at a rate of duty of 1½ cents per pound the contract cannot be filled at the delivery price named from England. We may note incidentally that even this superficial computation, when carried out by the *Evening Post*, was marred by the unfortunate mistake of assuming the ton in this case to be the long ton of 2240 pounds. The price was distinctly named as referring to a ton of 2000 pounds. The 1½-cent rate of duty would therefore be \$25 a ton, not \$28 per ton, as our afternoon contemporary has it.

Now, let us do a little superficial figuring on our own account, but on the basis of a 45 per cent. ad valorem rate, which the *Evening Post* does not even deign to consider. Assuming that the English price delivered at Denver was, after deducting commissions, &c., \$37.50; deduct \$7 for freight from Liverpool to Denver and 50 cents from foundry to Liverpool, and we reach \$30 at foundry as the price plus 45 per cent. duty. The price would therefore be \$20.69 at works, the duty being \$9.31 instead of \$25 at the specific rate.

Based on a \$16 cost of stock and shading \$30 on the castings, the difference to represent cost of fuel, labor, sand, &c., would be, say, \$14 full for Chicago. In England the cost of stock would certainly not be more than \$9 per ton—not \$10, as the *Post* has it—since a lower grade than Scotch pig would be used, leaving \$11.69 to cover the same costs. We would then have only a difference of less than \$2.31 to compensate for lower English fuel and labor and cheaper capital. The *Evening Post* makes the ridiculous mistake of assuming blast furnace and foundry labor to be of the same class. American molders would quickly resent any attempt to pay them only double the wages which the average furnaceman receives. Coke in Chicago costs more than double the English price.

We repeat that we do not profess to give the exact figures in this computation. We merely want to show, giving the other side liberal allowances, that it may happen, when there are added to the actual advantages of lower labor, fuel and stock, a lower freight rate, that a duty of 45 per cent. ad valorem is inadequate.

Our mystified contemporary befogs its readers when it stumbles blindly into other subjects, like the sales abroad by Americans of locomotives, and their taking contracts for bridges, &c. So far as the latter are concerned we may state that

the bulk of the material is foreign stock shipped direct from foreign workshops to the country in which it is to be used. Our locomotives are better liked in new countries where the conditions of road-bed, &c., are very much like our own. Railroad managers in South America and Australia are willing to pay us more, especially since English makers have not yet overcome their prejudice sufficiently to copy our designs or our methods of manufacture.

There was no necessity to go so far afield. We leave our contemporary to puzzle itself and its readers over the fact that English founders can beat American on the price of yoke castings in Denver, while we can sell stoves under their noses in some common markets.

The Knights of Labor.

The pretentious attempt to unite all wage-workers in this country under one grand organization has proved a dismal failure. It would be idle to deny that a great many fair-minded men regarded with lively satisfaction the early career of the Knights of Labor. Their hope that the disastrous conflicts, under which all suffer alike, would become less frequent and less injurious was soon destroyed, however. The professions of the recognized leaders of the order and the acts of the more turbulent members, who soon developed as the real rulers, could not be reconciled. Every accession to power seemed to feed the mania for striking. Every week brought fresh reports of wanton disregard of common sense and justice. Rushing blindly into one ill-advised battle after another, success increased the irritation, and defeat failed to gain the sympathy of the public. Relatively few in numbers, victories only led to courting of failure by emboldening to later more reckless attacks. Rival factions struggling for supremacy weakened the power of the best element for good. The rank and file were as loyal as workmen always are to their organizations, but the officers soon proved deficient in generalship. They were routed in every pitched battle, and the great army, swelled to hundreds of thousands, melted away almost as quickly as it gathered.

At Richmond two years ago the order had an aggregate membership of 800,000, and claimed to be 1,000,000 strong, whereas now, as reported by Secretary Hayes, there are not more than about 260,000 members in good standing, and receipts have fallen off in a still larger ratio, and fail to meet the necessary expenditures.

Mr. Powderly, however, is not alarmed, and suggests a reorganization on a more substantial basis, with an Executive Board reduced to four members—the General Master Workman to have full power. The annual address of Mr. Powderly, whose influence in the order seems to have been little impaired by the intrigues of ambitious rivals, refers to the lack of harmony in the Executive Board, “the unwise strikes which were entered upon against the laws and principles of the Knights of Labor,” and which swept thousands into poverty. Mr. Powderly says: “I do not blame men for striking. I blame them for making fools of themselves in not knowing how to strike. They always strike at the top leaf on the tree,

because it appears plainest to the vision; but they always leave the root undisturbed, to grow other and more powerful shoots. On many an occasion I have almost lost patience with prominent men in the labor movement, men who have lived in the past so long that they cannot see that the agencies of this generation are entirely different from those of any other, and from their point of view the strike has the same power as of old. We must teach men what it is that creates a necessity for a strike. They must be taught how to strike effectively against the system which permits gambling in money, in land, in railways and in the very food which is withheld from the mouths of millions at the sound of the stockbroker's ticker.”

Mr. Powderly proceeds to define the future scope and limitations of the order. Trade matters, he says, should be left to the national trade assemblies, and attention be directed to the more important questions of “finance, land and transportation.” In conclusion, he directs his lance with special vim against “the designing knaves” who have “secretly and untiringly worked for the ruin of this order.” He makes no allusion, however, to the rise of the American Federation of Labor, now boasting of a membership approximating 700,000, and which thus far seems to have studiously avoided the rocks upon which the Knights have so furiously dashed themselves—namely, strikes, dissension and extravagance. Altogether the outlook for the Knights of Labor is rather gloomy. Their purposes are too indefinite, if not chimerical, and within the order itself there is too much that is intractable, explosive and irreconcilable. If we mistake not, the period of the decadence of the Knights dates from the time of the attempted enforcement of the boycott and the inevitable conflict that ensued in the courts of justice. Affiliation with the enemies of law and order or any course tending in that direction must in the end bring self-destruction. A radical departure in this respect may bring a more hopeful future.

It has been a favorite argument of those who have undertaken to dictate the price of copper for many years to come that a value of some 15 to 17 cents a pound represented far more closely the range at which the mines of the world could supply its requirements at a fair profit than 11 to 13 cents. We know that so far as this country is concerned, the claim is not true. We know that the three leading Lake mines, the Calumet and Hecla, Tamarack and Quincy, alone could supply between 75,000,000 and 80,000,000 pounds annually at a good profit at 11 cents, and that Arizona can furnish 15,000,000 pounds at 10½ cents, and make fair money on investment. But we have thus far few, if any, data to guide in an estimation of the capacity of the Butte mines. We know that the Parrott made a little money even in the dullest times, but of the others no indication of their financial results have come to the surface except lately. The Boston and Montana Company are now, by an official statement, shown to be able to place copper on the market at a little less than 8½ cents. The Anaconda and the Parrott may have lower or slightly higher costs, but it is evident that 10 cents would not be ruinous to any of them. At that

price the three could certainly produce 100,000,000 pounds per annum. They are doing more now. Here we have nine concerns, three in each of the leading districts, which could supply close upon 200,000,000 pounds of refined copper per annum at the range for the different qualities of 10 to 11 cents, and make a fair profit. Such a product would be far in excess of our consumptive requirements even on the basis of the heaviest business we ever have had. Not the most sanguine in the copper trade has placed our consumption above 150,000,000 pounds. It borders on the ridiculous to point back to the prices of past decades. They have nothing to do with values as determined with natural conditions as they exist now. The question is how much of the metal can be put on the market at a given price, plus a fair profit. We hold that 11 to 12 cents for lake copper is a fair figure, considering cost, supply and demand. Every cent wrung from consumers above that is the tribute paid to the French speculators and their allies, the American copper companies. There may be some consolation in the fact that the latter have by far the better end of the bargain, that European consumers are probably contributing to their dividends on the quantities exported larger amounts than the profits which the syndicate is reaping from American consumers. Boston investors have had losses enough in other directions to entitle them to some relief.

Late Developments in Cuba.

Cuba has again had to contend with a good many difficulties this year. Politically, the island has been quiet, but brigandage and incendiarism became so frequent and widespread, coupled with the occasional kidnapping of wealthy merchants and planters, that in April Captain-General Sabas Marin issued a decree declaring martial law in five provinces. This measure to suppress crime has proved most beneficial. Bands of robbers have been broken up completely and fugitive members captured daily. On September 4 and 5 a destructive cyclone swept the island through its entire length, from Point Mais to Cape San Antonio, its greatest violence being exercised in the province of Santa Clara. The damage done to property was counted by millions, and 1000 people lost their lives. It was at first apprehended that the growing sugar crop had suffered to the extent of 25 per cent.; fortunately, these fears were disproved afterward. Abundant rains followed, and the canes have been in fine condition ever since; so much so that there is promise at present of even a larger yield than the one of 1888, good as it was. Mining for gold and for iron ore has been active; titles were granted for the working of two quick-silver and one antimony mine; and, by royal order, the island has been divided into an Eastern and Western mineral district, each district to be placed in charge of a special mine inspector. The strike of cigar-makers has been repeated this year, and for over a month brought this important industry to a standstill. Early in October work was resumed. The completion of the Cuban railroads has been going on steadily; the Caibarien and Sancti Spiritus railway is to be extended to Santa Clara,

with a new branch line from Placetas to Hernandez. Seldom has the laying of private portable railways on sugar estates been so extensive as this year. The Government has also regulated telephone enterprise in Cuba, Porto Rico and the Philippine Archipelago. The State is to receive 6 per cent. of the gross receipts, the concessions are to last 20 years, at the end of which period everything passes to the State. The finances are also getting into better shape. The first thing Captain-General Sabas Marin did when he came into office last year was to thoroughly purify the Custom House service; since then the revenue from that source has been a great deal more bountiful than before his accession to power. The budget of the island for 1888-89 estimates the income at \$25,622,968, and the outlay at \$25,614,494. In October offers were made to the home Government by Spanish and foreign bankers to convert the indebtedness of Cuba, bonded and floating. The plan is to reduce the 6½ per cent. interest and sinking fund of the \$124,000,000 1886 loan to 4½ per cent; and give the new bonds 75 years to run instead of 50.

Since the rise in sugar took place in the world's markets, last spring and summer, the Cuban planting interest has become more prosperous, centrifugals bringing, this summer on an average 5½ reals in the Cuban market, instead of 4½ reals, as during the corresponding period of last year. The crops have yielded in sugar, and molasses reduced to sugar, the following amounts:

	Tons.		Tons.
1879	816,566	1884	674,539
1880	644,432	1885	778,951
1881	590,511	1886	918,787
1882	727,061	1887	790,593
1883	560,689	1888	777,594
Totals.....	3,339,259		3,949,464

This is an increase of 610,205 tons, or about 20 per cent.

Field hands are scarce and receive \$20 per month and found. It is reported from Ottawa, Ontario, that Sir Charles Tupper is actively engaged in negotiating a treaty of commerce between the Dominion of Canada and Spain, and that Sir Charles proposes to secure for Canadian products the advantages in Cuba and Porto Rico that were granted to the United States by the treaty rejected in 1885. Among the articles to be admitted duty free into the United States were horses, cocoa, coffee, fresh fruits, hemp, flax, hides, palm oil, sugar not above No. 16, Dutch standard, molasses, woods, sponges, guano and coin. On cigars and cigarettes the duty was to be 12½ per cent. ad valorem; fine tobacco, with stems, 37 cents per pound; without stems, 50 cents per pound; other tobacco, 17½ cents; snuff, 25 cents; manufactured tobacco, 20 cents, and not manufactured, 15 cents. Among the American articles to be admitted duty free into the Spanish colonies were beer, fresh meats, bacon, fish, grain and other cereals, except rice, flour of cereals except rice, lard, cheese, cattle, sheep and hogs, clay, tiles, bricks, minerals, useful tools, agricultural implements, crude petroleum, tar, pitch, rosin, coal, seeds, building stones, ice, cast-iron in pigs and tubes, malleable iron and steel, wire, nails, screws, wrought-iron tubes, substances used in chemical industries and drugs. The Canadian Government is stated to have been engaged for a year or

two in trying to secure the West India trade, but with seemingly little success.

None of the treaties negotiated on a similar basis by Mr. Frelinghuysen, during the administration of President Arthur, has become operative. President Cleveland's administration evidently not feeling disposed to push our commercial policy in that direction. What the views of the incoming administration on this subject of the treaties with Mexico, Spain and Santo Domingo may be is as yet doubtful. There is an impression, however, that an effort will be made to revive them all. American trade with Cuba has been as follows:

Fiscal year.	Import.	Domestic export
1888.....	\$49,319,087	\$9,734,124
1887.....	49,515,434	10,138,930

More than ever we are absorbing nearly the entire Cuban sugar and molasses crops, hence the fiscal policy of the United States to be adopted in the future, especially as bearing on those articles, is vital for Cuban planters and merchants.

Strong pleas are made every now and then in favor of the vertical boiler in some of its various forms, and it has by some been warmly advocated even as a substitute for all other types of stationary steam generators. The first cost of the boiler, it is generally claimed, is moderate, it requires no setting, is easily repaired, compact, and, on the whole, efficient. This is a reasonable string of arguments, well entitled to consideration; but a moment's reflection will show that, after all, these inducements which it offers are not specially remarkable. Some of the boilers already in common use—the well-known return tubular, for example—meet these claims equally well, and besides have none of the drawbacks with which the vertical design can be justly saddled. Superior economy and safety, which have frequently been added to the other claims for the latter, have but a slight, if any, foundation in fact, and should properly be viewed in the light of all the attending circumstances. In the matter of freedom from danger from low water, cheapness as regards setting and small floor space necessary, the vertical boiler finds, no doubt, its strongest supports, the advantages which it affords in these respects being fully admitted and well recognized. It may also be held with some reason that the steam which it furnishes is slightly superheated and consequently dry, the upper ends of the tubes acting as superheating surface. Beyond this, however, generally speaking, the comparison with other types becomes less favorable. In point of evaporative power the vertical boiler is certainly not remarkable—in fact, generally below the average. Comparing the performances of ordinary horizontal brick-set boilers and of uprights, the relative capacities have been found to show a heavy balance in favor of the former. Thus in two given plants a set of vertical boilers with shells 87 per cent. as large as the horizontals had only one-third the capacity. As to freedom from danger in upright boilers, this, as in many other forms, with the exception of the low water danger to which we have already referred, is maintained only by judicious management, and finally, as regards durability and lightness of repairs, experience shows that these items cannot be advanced as

favoring the type. Extending, as they do, above the water line, the upper ends of the flues cannot be counted upon as heating surface, and furthermore frequently leak where they are expanded into the upper tube sheet, the unprotected ends rapidly succumbing to the high heat of the gases of combustion. Those who think, therefore, that they must have an upright boiler for many purposes where a horizontal tubular could be used to much better advantage, will do well to keep some of these points in mind. They bear directly upon what most concerns the steam user—the return of power for a certain expenditure of money.

That Denver City Contract.

To the Editor of the Evening Post:—
SIR: A few days prior to election you quoted from a Western paper an article referring to the fact that an English concern had entered into competition with a large number of American foundries for 5000 tons of castings for a cable railroad in Denver, Col., and that this English concern had underbid its American rivals, and had received the contract. You finally dismissed it with the remark that you believed the story was a campaign falsehood. I admit I was of that opinion myself, but *The Iron Age* (November 1) gives a full statement of this affair, and I think it is probably correct in its statement; at least, as *The Iron Age* puts it, the story seems to bear the evidence of truth. While its version differs considerably from that given by the Western paper, the substance of both is that an English foundry has underbid the lowest American bidder for this work, and is to ship to this country 5000 tons of castings (on which there is a duty of 45 per cent. ad valorem), and deliver them in Denver for less money than our Chicago foundries were able (or willing) to do. I must admit that this is a remarkable instance of what our high-tariff friends call foreign competition.

I wish you would tell your readers, of whom I am one, how this competition is possible, with our 45 per cent. tariff, and what we might expect under a lower tariff. The Mills bill makes 5 per cent. reduction on this class of goods. Yours respectfully,
JOHN H. PIPER.

November 12.

[It is not the Mills bill, but the Senate substitute, that makes a reduction of the duty on iron castings, and herein we think that the Senate bill is preferable to the Mills bill.]

We said that if the Chicago foundrymen could not compete at Denver with English foundrymen, who are handicapped with a duty of 45 per cent. ad valorem, or of \$28 per ton, as the case may be, they were greater slovens than we had taken them for. The basis of the cost of castings is the cost of pig iron, which *The Iron Age* puts at \$16 per ton in Chicago. The cost in Glasgow, Scotland, is 41/6 per ton, equal to \$10. Therefore, the disadvantage of the Chicago foundryman at the outset is \$6 per ton, against which he has the advantage of \$26 per ton duty, a net protection of \$22 per ton. Now, where does all this bonus go to? Not to labor. We have not the figures of comparative wages in English and American foundry work before us, but we have those of blast-furnace work, in a recent consular report (No. 49, Department of State), from which it appears that the labor cost of pig iron in Middlesboro', England, is 79 cents per ton, and in Eastern Pennsylvania \$1.25 per ton; difference, 48 cents per ton. The difference between the two countries in the labor cost of castings cannot be very much greater, but we will suppose that it

is \$1 per ton. Then we have \$6 difference in pig iron and \$1 difference in labor, total \$7, against a duty of \$28. What becomes of the other \$21 of net protection? *The Iron Age* says that the English foundrymen got a freight rate of \$7 per ton from Liverpool to Denver via Galveston, while the railroad charge from Chicago to Denver was \$9 per ton. That is a question which evidently has no relation to the tariff, but if we count it in it subtracts \$2 more from the net protection, leaving \$19 per ton bonus, or considerably more than the total cost of the raw material, pig iron.

There is some mystery about this affair which we do not attempt to penetrate, and the mystery deepens when we read in the trade journals almost every day that American firms have been awarded contracts for iron bridges and for locomotives in Australia, Chili and other foreign countries, where they are obliged to compete with English contractors on equal terms. We should say that if our foundrymen could not compete with English firms in the interior of the United States under the present duty, in the second century of the republic, it was the best possible evidence that protection was a failure as to that particular branch of industry, and that it was high time to try some other system; for is not the buyer of castings also an American citizen and entitled to some consideration? Even the Denver Cable Railway Company have some rights which white men are bound to respect.—*Ed. Evening Post.*

We comment on this reply editorially.—
Editor Iron Age.

The Grindstone Decision.

We print below in full the letter of Hugh O. Thompson, acting Secretary of the Treasury, to the collection of customs, at Suspension Bridge, relating to the duty on grindstones:

SIR: The Department duly received your letter of the 11th ult., transmitting the appeal (9438 s) of J. J. McIntyre from your assessment of duty at the rate of 20 per cent. ad valorem on certain so-called "grindstones" imported, per Michigan Central Railway, August 7, and returned for duty as an unenumerated manufactured article, under section 2513 of the Revised Statutes, and in accordance with the Department's decision of March 17, 1887 (Synopsis 8120). The sample submitted with your letter was forwarded to the collector at Boston, with the request for a report of the practice at this port on importations of such articles, it having been stated in the appeal of the importer that this class of stone is being passed at that port as grindstones, at a duty of \$1.75 per ton, under T. I., 438; and reports from the collector and appraiser at that port have been received, from which it would appear that Department's decision above mentioned was based on a misunderstanding of the character of this class of merchandise.

The appraiser states that these stones are imported at that port in an unfinished condition, and subsequently brought to a finished state, according to the use to which they are to be applied—that is, when the stones are to be used for grinding wood into pulp they are made in sizes varying in thickness from 8 inches to 26 inches, but when they are to be used for grinding metal, smaller sizes are made. This appears from the report of the appraiser to be the only difference between the stones used for grinding wood-pulp and those used for grinding metal, both being mounted or hung upon their axes, and being used in the same manner, there being no difference in the hardness or other characteristics of the stones, the same stone being in fact suitable for grinding either metal or wood.

Regarding the resemblance to burr-stone, referred to in Department's decision, the appraiser states that the Department is undoubtedly misinformed, inasmuch as the burr-stone is a remarkably hard, silicious stone, well known by its cellular structure and process of manufacture for the purposes required of it, and also that all burr-stones have a centripetal action, while the grindstones in use for producing wood-pulp or reducing metals revolve upon their axes, the wood being pressed against the outer surface or face of the stone in the same manner as metal is pressed when being ground.

It therefore appearing that these stones have every characteristic of common grindstones,

and are in fact such grindstones, the decision first above mentioned will be modified accordingly, and these stones admitted to duty at the rate applicable, under T. I., 438, for "grindstones, finished or unfinished." You will accordingly reliquidate the entry at the rate last mentioned, and take the necessary steps for refunding any excess of duty that may have been exacted on this importation. The same course may also be followed as to any prior importations, where duty has been erroneously assessed as in this case, provided the provisions of section 2931, Revised Statutes, as to protest, appeal and suit, have been duly complied with.

Big Steel Record in 1877.

The achievements of the past decade in increasing the output of Bessemer steel works are greater than the majority of those not directly connected with the industry have any idea of. Consulting the files of *The Iron Age* for the year 1877 we found the following record of work in March at the Edgar Thomson Works. As a "milestone of progress" it is interesting. Suffice it to say that the day is not very far off when the works will do three times the amount of work pointed to with pride as a great record in 1877.

The American Bessemer works have become famous the world over for their large product, surpassing in this respect the works of any other country. Before the Centennial brought so many foreign engineers to see for themselves, the reports of the large runs made had been received with incredulity, and if courtesy had permitted it they would have been disbelieved. But "seeing is believing," and we can tell the story of the run at the Edgar Thomson Steel Works, at Pittsburgh, without any fear that it will not be accepted as true. The report is as follows:

Product of the Edgar Thomson Steel Works for the month of March, 1877.

	Tons.	Lbs.
Total product of converting works, gross tons.....	8,002	1,560
Best 12-hours' work.....	204	40
Best 24-hours' work.....	407	1,180
Greatest speed accomplished, 8 heats in 1 hour 50 minutes, making.....	52	1,080
Total product of blooming mill.....	8,029	1,730
Best 12-hours' work.....	209	2,060
Best 24-hours' work.....	410	1,630
Total product of rail mill on rails.....	5,355	469
Best 12 hours, 644 rails.....	172	480
Best 24 hours, 1286 rails.....	344	...
Greatest speed accomplished, 120 rails in 1 hour 52 minutes, making, gross tons.....	32	320
In addition, product of rail mill on billets.....	216	948
Number of blows.....	1,216	
Number of ingots.....	8,302 1/2	
Number of rails rolled.....	21,572	
Percentage of second-class rails.....	0.50	

There are, besides the large total product, two most surprising features in the above report. The first is the small percentage of second-class rails—one-half of 1 per cent.—a most convincing proof that quality was not sacrificed to quantity; the other is the rapidity of rail making. It seems almost incredible, even to one acquainted with the process, that during 12 hours' run the average time occupied in rolling each rail was but a very small fraction over 1 minute 7 seconds; that 120 consecutive rails were rolled in an average of 56 seconds each, and that, notwithstanding this, the second quality rails were only one-half of 1 per cent. The managers of these works can certainly be congratulated on the excellent results indicated in the above report.

The Avery Elevator Bucket Company, Cleveland, Ohio, will occupy their new building in a few days. It is 80 x 264 feet, the engine and boiler house 50 x 55 feet. They will add several new stamping presses. The capacity will be doubled.

Pittsburgh editors remind their readers that \$380,000 are still needed to finish the exposition buildings and open the doors.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., November 20, 1888.

As the Republican Senators come together and confer with each other as to their probable course on tariff legislation, now that the control of public affairs is prospectively in their hands, they show some indecision. It is their present plan to call a caucus early after their meeting, to determine this important question, with others which will require their attention, in order to facilitate the business of the coming session, which will be brief by Constitutional limitation. The prevailing sentiment is to adopt one of two lines of action; the first, to renew the consideration of the bill immediately after the re-assembling of Congress, and taking a vote, so that it may go to the House to be disposed of as they see fit, and the other is to let the bill rest and have the House prepare a new one, based upon the Senate bill, with certain additional articles, like tin plate, placed on an absolutely protective rate. The Senate bill will receive early attention when that body is not overrun with business. A few days will determine to what extent the opposition will antagonize it.

The officers in charge of the steel inspection are now engaged in compiling a tabulated exhibit of the results of their tests and experiments in connection with the material used in the construction of the new ships of the navy. They have accumulated in the past two years' reports of the officers assigned to the different establishments employed under contracts with the Navy Department a vast amount of data in steel manufacture, showing the tensile strength and other physical properties of armor plates and forms. Much of the data used goes further into the details of composition than they feel authorized to communicate on account of the confidential nature of much of the information placed at their disposal by the manufacturers. The results, it is claimed, have been compiled for the private use of the Department, and for the benefit of officers assigned to duty under the Board of Steel Inspection. They are also engaged in collating the record of results which, when completed, may not be treated in the same confidence, as it will deal only with the statement of tests.

It appears that the board has become possessed of much valuable information in the nature of formulas for mixing metals to produce certain properties which they are not at liberty to make general without the consent of the parties furnishing it. The theoretical results of the labor of the board are a great advance upon the knowledge of steel manufacture when these valuable tests and experiments were commenced with the first products of steel under the contracts for the first ships. In a general way the officers say that our American steel producers can now compete in the best works in the world in the character of material they turn out. The studies made within the past two years have been unexpectedly great, and with the even more liberal appropriations which may now be expected for the construction of additional ships and armored seacoast defenses this important work will be carried to even greater perfection.

The movement inaugurated by Secretary Whitney in the reconstruction of the navy, and the intelligent manner in which he has officially forwarded this great work, will be an enduring tribute to his statesmanship and patriotism while at the head of the civil administration of that much-abused Department of the Navy. It is not improbable that the Department may authorize the preparation of a tabu-

lated exhibit of the results of the tests for general information, and possibly this valuable contribution to our knowledge of steel in structural forms may be extended so as to make it of practical use. Secretary Whitney, in speaking of the work accomplished under his administration of naval affairs, said: "I do not think that I would be assuming too much in saying that the navy and its prospects of steady and intelligent expansion are better to-day than they were four years ago. I believe that the reconstruction of the navy on modern principles is now an established fact, and that from year to year the work will go on until the flag of the United States will wave over the finest navy of any nation in the world. The ships we already have afloat and those which are rapidly nearing completion are the best of their class. It is quite possible within a few years the nations of the world will be studying steel naval architecture from us, instead of our going to foreign countries for models and ideas." The Secretary continued: "I have no doubt but that the new Administration will go on with this work. The present Administration has made a good record in this branch of national advancement. The vessels already finished or under construction will give us a fleet of 20 steel vessels of all kinds. This in itself will make a very creditable showing. Besides all this, the Government will have at its command plants which will be prepared to turn out the largest castings and forgings required for shipbuilding. We also can now manufacture the best steel in the world, so that our ships are being constructed not only on the best-known models, but of the best materials. If nothing else were done to characterize the present control of public affairs, the condition and prospects of the navy would be an evidence of progress."

A Montana Copper Company.—The Boston and Montana Consolidated Copper and Silver Mining Company have issued a statement showing that the product of matte was 14,565,867 pounds, yielding 59.44 per cent., and the product of shipping ore was 354,417 pounds, yielding 44.44 per cent., or a total of 8,815,987 pounds of refined copper, from which has been realized the gross sum of \$1,015,762.55. The costs have been:

Interest.....	\$671.52
Expense account at New York and Boston.....	15,848.08
Copper charges.....	22,513.71
Refining charges.....	19,832.97
Transportation.....	84,709.16
Mining expense, 12 months.....	597,138.88
Total.....	\$740,714.32

This left a mining profit of \$275,048.23, the cost per pound of copper sold being 8.4 cents. The company spent \$153,453.16 for construction at the mine and works, and \$37,500 on mine and smelting plant, leaving a balance of \$84,095.07.

From the Marquette (Mich.) *Mining Journal*, of the 10 inst., we take the following table, showing the shipments by ports up to date this season, in comparison with shipments for the corresponding portion of the two preceding years:

Port.	1886.	1887.	1888.
Marquette.....	779,648	784,953	817,428
Escanaba.....	2,002,458	1,962,766	1,447,053
St. Ignace.....	106,820	88,745	71,020
Ashland, Wis....	981,482	1,021,792	698,488
Two Harbors, Minn.....	408,819	380,196	300,954
Total.....	4,279,227	4,238,092	3,334,943

While at Providence, R. I., last week we had occasion to see the new Strong locomotive recently turned out of the shops of the Hinkley Locomotive Company for the Atchison, Topeka and Santa Fé

Railroad. The engine was stationed at the roundhouse of the Boston and Providence road, preliminary to making its first trial run with a freight train on that line between Providence and Stonington. The first trip was made during Friday night, and the engine will be kept at work there for a week or ten days before going West. The locomotive is four-coupled and has 19 x 24-inch cylinders and 5 foot 8 inch drivers, the total weight being 60 tons. Of this 72,000 pounds come on the drivers. Mr. Strong has designed for this engine a new wheel, having spokes of rectangular section. A striking feature about them is the absence of counterweights, so far as appearance is concerned, the counterweighting being accomplished by filling the desired number of spokes, which are hollow, with lead. The engine has been named A. G. Darwin, after the president of the Strong Locomotive Company.

Southern Furnaces and Rail Freights.

Under date of November 19, T. H. Carter, Commissioner of the Southern Railway and Steamship Association, has issued the following circular relating to pig-iron contracts:

The agreement in regard to pig-iron rates and contracts, provides as follows: "Should any of the furnace companies sell iron during any month for future delivery, to which they desire that rates in effect at date of sale shall apply, they shall report such sales to the commissioner, giving date of sale, consignee, destination and duration of contract; stating, approximately, the month in which shipments will be made; provided that the rates of freight shall not be guaranteed on sales made after more than 12 months from date of sale." It was clearly the intention that the furnace companies should report promptly contracts for which they desired protection at rates in effect when sales were made, and I must advise you that, in future, no billing orders will be issued for sales which are not promptly reported (say within three days from dates of sales). Sales should be reported by the furnace companies, or their regularly authorized agents, as I understand delays have sometimes occurred by reason of furnace companies having depended on commission merchants to report sales, while the commission merchants thought the furnace companies had reported. In addition to sales for which contract rates are requested, and which, as above stated, should be reported promptly when sales are made, each of the furnace companies should, in accordance with the agreement, report on the 15th day of each month all iron sold during the preceding 30 days for shipment to points on and beyond the Ohio River, but for which contract rates are not desired, stating to whom sold, destination, quantity sold, and price for which sold; as this information is necessary in making the monthly adjustment of rates. The furnace companies have been very negligent in regard to the reports required on the 15th day of each month, and considerable difficulty has been encountered from time to time on account of a lack of proper information on which to fix the rates in accordance with the agreement. Your co-operation is earnestly requested, and I trust that less difficulties will be encountered in the future.

The export duty on pine logs has been increased 50 per cent. by the Canadian Government, thereby hastening the destruction of American forests.

London *Industries* gives some interesting figures showing the growth of the operations of the London Hydraulic Power Company. In the last week in October, 1887, there were 570 consumers, using a total of 1,942,000 gallons of water. In the last week of October, 1888, the number of consumers was 780, and the consumption of water exceeded 3,000,000 gallons. The company have completed contracts for supplying another 120 consumers, which will bring the number of consumers up to a total of 900. Nearly 30 miles of hydraulic mains are at present laid in London. The power is available day and night and on Sunday all the year round at a pressure of 700 pounds per square inch.

Range and Position Finding in Coast Defense.

The object of "range and position-finding" is to ascertain the distance and location of the enemy's ships. In this way guns can be directed without the target being visible to the gunners. As the smoke very quickly obscures the direct field of view, this arrangement becomes essential to an efficient military defense. It may sound strange mention of the fact that experimental firing made with the assistance of such a system, the gunners in laying their guns not seeing the target, has given better results than when the guns were sighted directly on the target. This has been the case to a conspicuous degree where the target was in motion. The system is necessary for the operation of fixed submarine mines when they are exploded at the will of an operator.

This is how it is done: In all cases the distances are plotted on maps divided into numbered squares. Tables are provided for each gun, giving the horizontal and vertical angles necessary to attain the middle of each square. The traverse circles are divided for the horizontal angles, the meridian line being usually taken as the zero line. The number of the square into which the target is likely to move being telegraphed to the gun, it can be pointed very quickly, and the instant of firing indicated afterward from the observing stations. In this way a very large number of guns can be concentrated from different batteries on a single vessel or group of vessels.

Electrical communication is utilized for range and position finding of various systems. Two general methods are in use—one having two observers at the extremities of a horizontal base line, and another with a single observer placed at some height above the general level. In the two-observer method the angles are measured, and either plotted directly or are transmitted to a central station for plotting. It is essential that this work shall be done very rapidly and accurately. To read the angles and then transmit and plot them involves less of time and chance of errors in each step of the operation. Efforts have therefore been made to eliminate the necessity of reading the angles and to transmit and plot them automatically. The Siemens apparatus is considered a typical arrangement for this purpose. It consists of two parts used at what may be called the plotting and the auxiliary station.

A plain table, divided into squares, has a map of the harbor thereon. On this table is a telescope with cross lines, carrying an alidade or straight-edge. At a point representing on the map the other observing station is a "step-by-step" electrical mechanism carrying a very light aluminium alidade, which is operated by impulses received from the auxiliary station. At the auxiliary station a box is placed containing a small hand dynamo and a telescope with cross lines. The hand dynamo being worked the telescope is moved to bear upon the target. If the instrument is in adjustment, the aluminium alidade at the other station will move with the auxiliary telescope, keeping parallel to it. The cross lines at the observing station being brought upon the target, the location of the target will be at the intersection of the straight-edge attached to the telescope, with the aluminium alidade operated in parallelism to the telescope of the auxiliary station.

The track of a vessel can thus be continuously traced, the two observers simply keeping the cross lines of their telescopes directed upon the vessel. It is necessary, of course, to make sure that both instruments are directed on the same point of the target. To this end it is necessary to have suitable means of communication between observers.

The method where one station and observer only is required is essentially a method of obtaining a location by polar coordinates. It presents many advantages over the two-station system. It involves having the observer at a known height above the sea level, which should, if possible, not be less than 100 feet, although fair work has been done with only 50 feet. The less the height the more important is it to know and apply for correction the height of the tide. It consists of a telescope mounted somewhat like a theodolite, with a device for multiplying the movement in the vertical plane as the angles to be read are very small. It also has adjustment for different heights, so that the range is obtained by direct readings upon the cross lines being brought to the intersection of the target with the water. Having the horizontal angle from the horizontal limb and the range from the vertical angle, the position of the target is accurately located on the map.

Major Watkins of the Royal Artillery has invented one of this form of range finders where the horizontal angle or direction of the target, as well as its distance, are automatically transmitted as many points as may be desired. The details of this apparatus are kept a secret, the English Government having paid the inventor £25,000 and £1,000 annually for 10 years. The value attached to an efficient method of range and position finding is thus tangibly indicated. While not wishing to belittle the ingenuity of the feat accomplished by Major Watkins Capt. Zalsky is of the opinion that some American electrician could produce apparatus quite as efficient. He regards it as a problem not to be lightly approached.

Lieut. Bradley Fiske, of the United States Navy has recently devised an electrical range finder which has much that is novel in that line and promises excellent results. Judged by preliminary experiments it will be of particular value for naval purposes, filling a place entirely unique and heretofore unattainable.

The Navy Department will soon issue proposals for the construction of a floating battery for coast and harbor defense, authorized by the last Congress. It will be a steel ship of the monitor class of 4200 tons burden, double turreted, and will be fitted with all the latest improved appliances. The designs for the ship were made in the Bureau of Construction and Repair. She will have a battery of four guns—two 16-inch and two 12-inch—the largest ever made in this country. The amount originally appropriated was \$1,000,000, but by a provision of the bill the final cost of the ship, exclusive of armor, should not exceed \$2,000,000, and the material used in the structure shall be, so far as practicable, of American production, and furnished and manufactured in the United States. The turrets in which the heavy guns are will be fitted with an improved deflecting armor.

Some months since Abram Reese, one of the oldest practical iron and steel workers in Pittsburgh, procured a patent on a process of re-rolling steel rails from standard sizes to those of small gauge. He at once tried to interest some of the capitalists of Pittsburgh in his invention with an idea of locating a plant in that city, but was unsuccessful. The next step of the inventor was to advertise his prospectus in the press of Chicago, with very satisfactory results. On Monday, the 12th inst., a company was organized in that city for the purpose of erecting a plant to utilize the invention. The company is composed of Abram Reese, Harry Reese, William Haslage and Thomas W. Davis, of Pittsburgh, and five capitalists of Chicago. The capital stock of the organization is \$200,000, all of which is

paid up. The site selected for the new plant is at Hartford City, Blackford County, Ind., a city of about 3000 population and located 167 miles east of Chicago. As an inducement to locate the new plant in that place the authorities offered 100 acres of ground in fee simple, which includes a natural-gas well with a capacity of 350 pounds pressure. In addition to this other liberal inducements were offered and accepted. Work will be commenced at once on the main building, which will be 80 x 166 feet. The railroad facilities are excellent and could hardly be improved upon. The object of the company is to roll old rails into smaller rails and also to manufacture splice bars and bolts for small rails, as well as spikes of proper sizes for small rails.

The Ohio and Western Coal and Iron Company blew in one of their new furnaces, at Floodwood, Ohio, on the 4th inst. Coke is used for fuel and the ores are a mixture of Lake Superior and native. They will make both a strong foundry and an open soft pig iron. The furnace is now running very successfully. The constructors guaranteed 125 tons of iron daily, and the indications are that the output will be much above that, using these materials. The furnace plant at Floodwood consists of two stacks, but it has not yet been determined when the other one will be blown in. These furnaces are 75 feet high and 17 feet in diameter at bosh, and have four Mackintosh & Hemphill blast engines, with 48 x 84-inch blowing cylinders. One furnace is equipped with fire-brick stoves and the other with iron-pipe stoves. The company also own the Helen Furnace, at Orbiston, and the XX Furnace, at Shawnee. The four stacks combined will have a capacity of 300 to 350 tons of pig iron daily. Pickands, Brown & Co., of Chicago, and Pickands, Mather & Co., of Cleveland, Ohio, are agents for the sale of the entire product now being made, which it is believed will find a ready market owing to its excellent quality. The Ohio and Western Coal and Iron Company is virtually a Boston institution, with some of the most energetic and capable business men in that city in its management. They have an excellent outlook before them, and it is to be hoped that they will be amply compensated for their large investments in this property, of which they secured possession 18 months since.

Bids were opened on Tuesday at the Treasury Department for the construction of a supply steamer for the lighthouse service, to be named the America, as follows: Neafie & Levy, of Philadelphia, \$194,000; Pusey & Jones, of Wilmington, \$174,000; Columbian Iron Works, of Baltimore, \$198,000; John H. Dialogue, of Camden, N. J., \$171,000. The last-named bidder also submitted alternative propositions to build the vessel with compound engines at \$163,000 and with triple expansion engines at \$171,000. There is an appropriation of \$175,000 for this vessel.

Last week the United States Rolling Stock Company, of Anniston, Ala., did a remarkably quick piece of work, concerning which the *Tradesman* gives the following details. "The bell at Woodstock Furnace No. 2 having fallen in, another had to be made. At 2 o'clock p. m. the metal was still in the shape of pig iron, and the large casting was made, taken to the machine shop and turned, and then drilled and delivered to the Woodstock Company at their furnaces before 4 o'clock a. m. Considering the size and shape of the casting, and the difficulty of handling and fastening it to the lathe, much credit is due for the exceedingly short time required to do the work."

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., November 20, 1888.

Pig Iron.—The market shows considerable steadiness considering the apathy manifested by a large proportion of consumers. The enormous furnace output is regarded as a protection against any material advance in prices, so that there is a general indisposition to do anything beyond covering requirements for 30 or 60 days ahead. Sellers are equally indifferent in regard to forward contracts, as they find their entire output taken for immediate consumption; and while this continues it is not worth while to bother about the future. The scarcity of Ores is another reason for the firmness in Pig metal, and until there is some prospect for lower cost makers are not likely to force their product on unwilling buyers. The market may, therefore, be considered quiet, but stubbornly firm, and for the present gives no indication of change in either direction. Consumption keeps up remarkably, but the season is at hand when curtailments may be expected, which fact, in connection with an increasing output at furnace, may lead to a little softening in prices toward the close of the year, although that will depend a good deal on the outlook for business during the early portion of 1889. As yet there is nothing in sight beyond the usual run of a good healthy demand. There is no large work on the market of any importance, without which it will be no easy matter to maintain prices on their present level. Elevated railway work is not likely to be important, although there is still a good deal of work to finish on old contracts. Architectural work on a large scale is not specially promising, but car building, bridge building and ship building promise considerable activity. All these important interests are in fairly good condition, but to secure a demand for the enormous capacity of mills and furnaces requires more than a moderate demand, and that is just where the uncertainty comes in. It is not that business is dull or likely to be so, but it is the immense capacity and the determination to utilize that capacity to its fullest extent that causes the uneasy feeling. Yet there may be business enough to satisfy everybody. In the meantime the work is not definitely in hand, and for that reason buyers are acting with the utmost caution until the outlook becomes more settled. Good brands of Iron are scarce, so that prices of such are naturally firm, and, while other descriptions are not in large supply, the offerings are large enough to prevent, for the present, any movement toward higher figures. Quotations, therefore, remain same as last week, say \$18 @ \$19 at tide for No. 1 Foundry, \$17 @ \$17.50 for No. 2, and \$16 @ \$16.75 for Gray Forge. There are a few special brands that command higher prices than here quoted, but the average for standard brands would be within the limits named.

Blooms.—A fair movement is reported, but without change in prices, which are about as follows: Steel Nail Slabs, \$29 @ \$29.50, at mill; Billets, from \$32 to \$36, according to analysis; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$42 @ \$44; Scrap Blooms, \$32.50 @ \$34 @ "bloom" ton of 2464 lb.

Muck Bars.—The supply is somewhat limited, and although the demand is less urgent than it was some time ago, prices have been well maintained at from \$29 to \$30 at mill, according to quality, delivery, &c.

Bar Iron.—There is but little change to notice in the market since date of our last report. As a rule, there is plenty of business around, but irregularity in prices continues, as noticed during the past two or three weeks. It is, therefore, difficult to determine whether the market is shaping toward improvement, or the reverse. There are some indications of a favorable character, and the general sentiment inclines to that view of the market, but the irregularity in prices is rather discouraging to those who are looking for uniformity and firmness. A slight easiness in prices, and possibly some little falling off in the demand, may be met with during the next few weeks, but it may be preliminary to greater firmness and greater activity after the turn of the year. But it is impossible for any one to say with certainty what the outcome will be. There is plenty of business for the present, and there is no apparent reason why it should not continue. In many respects the position is peculiarly favorable, and it would be no surprise to many in the trade to meet with an extraordinary demand during the coming year. Meanwhile developments are carefully watched, and, while slight concessions may be obtained from those who are beginning to feel the necessity for new business, there is not enough in it to warrant the idea of a permanently lower range of prices. It is difficult to give exact quotations, but from 1.8¢ to 1.9¢ probably covers both ends of the market, although there are some mills in the vicinity that quote 1.95¢ @ 2¢, but they are full of work to the end of the year, which doubtless accounts for the difference in prices. Skelp Iron is not quite so much in demand, but mills are full of work for some time to come, and, it is said, could easily secure large additional orders at from 1.87½¢ to 1.9¢, but, in the meantime, 1.95¢ is asked without securing business.

Plate and Tank Iron.—There is a good demand for Plates, but competition is so very close that prices have not been fully maintained. As a matter of fact it is claimed that prices have been seriously cut in one or two specially desirable orders, and the same feeling prevails to some extent even among the smaller trade. In Steel Plates Pittsburgh is a sharp competitor, a good many important contracts having gone in that direction, including one for 2000 tons, a day or two ago, for one of the shipyards. Still, the local mills are nearly all busy, and if work comes out as expected it will not take long to stiffen prices back to the old figures. Meanwhile asking prices are about as follows, concessions being made according to quantity and class of material required: Ordinary Plate and Tank Iron, 2.05¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.25¢ @ 2.3¢; Shell, 2.7¢; Flange, 3¢ @ 3¼¢; Fire-Box, 3¼¢ @ 4¼¢.

Structural Iron.—New business comes in rather slowly, although the outlook is said to be very encouraging. Bridge material and ship material are likely to be in good demand during the winter and spring; and many manufacturers are feeling decidedly hopeful, although at the moment some of their departments are not fully employed. Prices are a little irregular, but in most cases about as follows: 2.05¢ @ 2.10¢ for Bridge Plate; 2¢ @ 2.10¢ for Angles; 2.6¢ @ 2.7¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

Sheet Iron.—The demand has fallen off considerably, and although stocks are pretty well exhausted there is no difficulty in securing prompt deliveries on all new business. Small lots, best makes, are quoted as follows:

Best Refined, Nos. 26, 27 and 28....3¼ @ 3½¢
Best Refined, Nos. 18 to 25....3 @ 3¼¢
Common, ¼¢ less than the above.

Best Bloom Sheets, Nos. 26 to 28....4½ @ 4¾¢
Best Bloom Sheets, Nos. 22 to 25....4 @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21....3½ @ 3¾¢
Blue Annealed.....2.8 @ 3 ¢
Best Bloom, Galvanized, discount.....62½¢
Common, discount.....67½¢

Merchant Steel.—The demand is about as usual, at prices as follows: Tool Steel, 8¼¢; Machinery, 2.6¢; Crucible Spring, 4¼¢; Crucible Machinery, 5¢; Best Sheet Steel, 10¢; Ordinary Sheet, 8¢.

Steel Rails.—Reports from this market cannot be made to harmonize with those from other points. The usual asking price has been \$28.50 @ \$29 at mill, and it is doubtful if less than \$28 has been accepted at any time. It is stated on the highest authority that an order for 40,000 to 50,000 tons was offered to three mills at \$27.50 and by them declined. It looks, therefore, as if \$28 would be a rock-bottom quotation, and some well-informed parties are talking \$29 @ \$30 as likely to be ruling quotations before the end of the year.

Since writing the above we learn that the Pennsylvania order for 45,000 tons has been placed at \$28 at mill, divided between the Pennsylvania Steel Company, the Cambria Iron Company and the Carnegie Company.

Old Rails.—The offerings are very light, and as there is still a fair demand prices are steady at \$24, Philadelphia, for T's. Buyers offer \$23.50 for moderate quantities, but have not been able to secure supplies at less than \$24, which was the price on last sale reported.

Scrap Iron.—There is more disposition to buy, and prices are somewhat firmer, although usually quoted as follows: \$21 @ \$21.50 for cargo lots; \$21.50 @ \$22.50 for carload lots, delivered, or for choice \$23; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$25 @ \$26. Old Car-Wheels, \$17 @ \$18, Philadelphia, or its equivalent.

Wrought-Iron Pipe.—The demand has fallen off considerably, although there is still a great deal of business to be placed before the close of the year. Prices are irregular, and in some cases discounts have been increased, but as a rule they are quoted as before—viz.: Black Butt-Welded, 52½¢; Galvanized do., 42½¢; Black Lap-Welded, 62½¢; Galvanized do., 52½¢; Boiler Tubes, 60¢.

Nails.—The feeling is improving, but there is no change in prices as yet. Good brands are steady at from \$1.90 to \$2, and others at low prices seem to be less frequently mentioned than was the case some time ago.

Messrs. Amos H. Sheetz and Harry Stephen, the former having been selling for the past six years for McLanahan, Smith & Co., Limited, and the latter formerly of Stephen, Jones & Co., and long connected with Morris Wheeler & Co., have formed a partnership under the style of Sheetz & Stephen, as manufacturers' agents for Iron, Steel and Nails. They now represent McLanahan, Smith & Co. for their J. B. brand of Bar, Bolt and Nut Iron, and the Milton Mfg. Company, Nuts and Washers. Their office is at 206 Walnut place, to be removed after December 1 to the Drexel Building.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, November 19, 1888.

Pig Iron.—The condition of the market appears to be without any particular animation whatever, but still very firm and conservative. The demand is of a very healthy character, and contracts are being

made for round lots on a basis of prices that have been ruling for the past month or two. There is no disposition at all on the part of the producers to force sales, as their entire products are being taken away about as fast as made. The only trouble at the present time is the want of cars, and this, at times, is quite a serious obstacle in filling orders promptly, and, as yet, there appears to be no remedy in sight. The Eastern market now is the most eligible one, and shipments to the East are assuming large proportions, mostly via Savannah, Charleston and Brunswick. The output of the Southern stacks has been gradually increasing during the year, and furnaces that a year ago registered 80 and 90 tons are now producing 100 to 110, and in quality considerably improved. Besides this, there some four or five new stacks of large capacity that will soon go in blast, so that '89 may be looked upon as a year that will far excel any previous year in the history of the Southern Iron producing industry. Contrary to expectations Southern foundries are calling for more Pig than usual at this season of the year, which can only be accounted for by increased demand for their work.

The Southern Railway and Steamship Association have issued a circular, under date of 17th inst., clearly setting forth the conditions and requirements that govern shippers who make large contracts for future deliveries, and expect the same to go forward at the rates of freight ruling at the time such contracts are made.

Chicago.

Office of The Iron Age, 95 and 97 Washington street, CHICAGO, November 19, 1888.

Pig Iron.—A very firm feeling is apparent in everything except Bessemer Pig Iron, and possibly Southern Coke. Makers of Bessemer Pig are disturbed over the low prices at which Steel Rails are being sold, and cannot resist the conclusion that they may have to bear their share of the depression in that branch of trade, which it now seems certain will extend over at least a considerable portion of next year. With the advance in Coke and dearer Ore, the outlook is decidedly discouraging for profits in the manufacture of Bessemer Pig. Although most sellers of Southern Coke Iron have adhered firmly to established prices, it has been found possible to secure a concession of 25¢ per ton from one of them during the week, and the further maintenance of current quotations will depend to a great extent upon the additional quantity of Iron available from that source. Furnacemen generally are not pushing sales at present, partly because they look for better prices soon and partly because they are fully aware that November and the early days of December are almost always very dull. Some of them are even now endeavoring to anticipate the future by marking prices up 50¢ per ton, but this movement is not general, and they may be obliged to reconsider their action later. Stocks are very light, however, and if the heavy buying expected in December materializes, they will be credited with the possession of remarkable foresight and good judgment. A few consumers are being influenced by the evident strength of the market to provide to some extent for their future requirements, but the volume of business has not been large, except in Lake Superior Charcoal. Of this Iron some 3000 tons were sold at full prices. The greater part of this was taken by Car-wheel manufacturers, who find their business improving through the demand for new cars, and who will require much more Iron, if appearances are not

very deceptive. We quote as follows for cash, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1 and 2, \$20; Nos. 3 to 6, \$20.50 @ \$21; Alabama Car-Wheel, \$26.25; Jackson County Softeners, No. 1, \$18.60; Hocking Valley Soft Foundry, No. 1, \$17.50 @ \$18; American Scotch (Blackband), No. 1, \$20 @ \$21; other Ohio Soft Irons, No. 1, \$17.50 @ \$18; Lake Superior Coke, No. 1, \$18 @ \$19; No. 2, \$17 @ \$18; No. 3, \$16 @ \$17; Southern Coke, No. 1 Foundry, \$17.50; No. 2 Foundry and No. 1 Soft, \$17; No. 3 Foundry and No. 2 Soft, \$16.25; Gray Forge, \$15.50.

Bar Iron.—Orders for Car Iron have been placed during the week at 1.72½¢ @ 1.75¢, flat, f.o.b. Chicago, the slightly higher prices realized over last week indicating a better tone. A local railroad will place an order for 1000 Cars this week, the Iron for which will be bought subsequently. Miscellaneous specifications are now quoted at 1.75¢, half-extras, f.o.b. Chicago, for mill lots of Common Iron, but only a moderate business is reported in Iron for the general trade, the upward tendency in prices having probably checked purchases until a higher rate is thoroughly established. Manufacturers are notifying their agents to withdraw offers and to submit all propositions to them before closing contracts. Small lots are quoted from store at 1.85¢ @ 2¢, according to quantity and quality. Stocks are small.

Structural Iron.—The contract for Beams for a large office building is to be let this week, and the competition for it will probably be very keen. The outlook for Bridge work is better, as a number of projects in this line are maturing. About 1400 tons of such material will be contracted for this week. Mill orders are quoted as follows, f.o.b. Chicago: Angles, 2.15¢ @ 2.20¢; Universal Plates, 2.25¢ @ 2.30¢; Tees, 2.55¢ @ 2.65¢; Beams and Channels, 3.40¢. Small lots from store are quoted as follows: Angles, 2.35¢ @ 2.50¢; Tees, 2.60¢ @ 2.70¢; Beams, 3.80¢.

Plates, Tubes, &c.—Business in Plates has been confined to small lots. Manufacturers who had long since forsaken this market are now soliciting here for Plates and Heavy Sheets, but those who regularly supply the local trade are apparently as busy as ever, deliveries being anything but prompt and options for even a reasonable length of time being refused. A novel feature in this market is an order for 25 tank cars, to be used in distributing oil from this point. From 25 to 50 more will probably be needed soon. Bids are now being received for the Iron. Tubes are nominally unchanged, but there are rumors of concessions by some of the manufacturers. Store prices are unchanged, as follows: Heavy Sheets, Nos. 10 to 14, 2.65¢ @ 2.70¢; Tank Iron, 2.55¢; Tank Steel, 2.80¢; Shell Iron, 3¢; Shell Steel, 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 60¢ off.

Sheet Iron.—The sudden change to cold weather during the week brought with it the long-expected demand on the jobbers for Black Sheets, and stocks have been run off rapidly. They quote small lots of No. 24 at 3.10¢, Nos. 25 and 26 at 3.20¢, and No. 27 at 3.30¢. Manufacturers' agents quote mill lots at 3¢ at mill, but this can probably be shaded for favorable deliveries.

Galvanized Iron.—The demand has been so good, and the mills are so far behind in their deliveries, that manufacturers' agents have in some cases been obliged to purchase lots from outside parties in order to meet the most pressing wants of their customers. Yet no change is reported in prices, small lots being still

quoted at 60¢ and 5¢ off for Juniata, and 60¢ and 10¢ off for Charcoal.

Merchant Steel.—Contracts have been placed for several hundred tons of Open-Hearth Spring Steel at about 2.40¢, f.o.b. Chicago. It is now quoted from stock at 2.50¢. Tire and Sleigh-Shoe Steel have also been in good demand, and consumers generally are disposed to take hold. Open-Hearth Machinery Steel is sympathizing to some extent with Spring Steel, but makers of choice qualities are adhering firmly to old quotations. We quote as follows from stock: Bessemer Bars, 2.30¢ @ 2.40¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Machinery, 2.50¢ @ 2.75¢; Crucible Sheet Steel, 7¢ @ 10¢.

Steel Rails.—Less than 1000 tons appears to be the aggregate of the business done during the week. Very few more Rails will be needed this year, and inquiries for next year's delivery are discouragingly small at present. Local manufacturers continue to quote \$30 on Western business.

Old Rails and Wheels.—In this line nothing seems to be doing for lack of agreement between buyers and sellers. Sellers of Old Rails ask \$23.25, but buyers are not disposed to pay this price. They offer about \$1 per ton less. Consumers are stocked for the present in this vicinity, and the Mahoning Valley mills seem to be able to buy on better terms in other quarters. In Old Car-Wheels the market is stagnant, but dealers continue to quote \$19.50 @ \$20 as the rates at which business could probably be done.

Scrap.—More inquiry is noted, but sales have been limited, as consumers are not disposed to pay more than they have been giving. An occasional lot of 100 tons of No. 1 Forge is disposed of at \$20, but the local dealers generally ask from \$1 to \$2 more. Mixed Country Scrap is selling at \$14 @ \$15. Selling prices of carefully selected Scrap are as follows, per ton of 2000 lb: No. 1 Forge, or Railroad Shop, \$21; Track Scrap, \$20; Horseshoes, \$20; Axles, \$26; No. 1 Mill, \$15 @ \$16; Pipes and Tank, \$13; Light Wrought, \$11; Cast Machinery, \$14 @ \$14.50; Stove Plate, \$12; Cast Borings, \$9 @ \$9.50; Wrought Turnings, \$12 @ \$12.50; Axle Turnings, \$14.50; Coil Steel, \$15; Leaf Steel, \$16.50; Locomotive Tires, \$16 @ \$17.

Hardware.—The cold weather of the past week has greatly stimulated the demand for some lines of Shelf Hardware, and merchants would be pleased to see it continue. Trade in Holiday Goods has opened up well, and large quantities are being shipped of such goods as Skates, Sleds, Cutlery and other articles adapted to this particular demand. Staple Goods are heavy and moving but slowly. Collections are fair.

Nails.—Manufacturers' agents have not been favored with much actual business, but they are now receiving inquiries which promise to develop into orders shortly if terms can be arranged. Large buyers are anxious to negotiate at present prices for deliveries in January, February and March, when they will need good stocks of Steel Nails to meet the large demand usually experienced in those months. Manufacturers are not entering into such agreements with much enthusiasm, as the prices which would have to be made are anything but tempting to them. Another reason is also suggested. Although the great national pooling scheme has fallen through, and Steel Nails have apparently dropped into a condition of hopeless demoralization, there are indications that the manufacturers are not disposed to abandon all efforts to control the trade. They expect to be able to accomplish something through which the price of Nails will be advanced considerably before the 1st of

January. To make contracts for large quantities for future delivery would defeat the very object toward which their plans are directed. Wire Nails are understood to be firmly held, but they also are not moving freely. Steel Nails continue to be quoted at \$2 from store, \$1.90 for carloads on track, and less for large lots. Wire Nails are sold at \$2.60 from store and \$2.55 for carload lots on track.

Barb Wire.—A fair movement is in progress both in small lots and carloads. Large buyers are looking about sharply for bargains, but some of the manufacturers are holding off at present in the belief that better prices can be obtained after the cheap sellers have loaded up. Small lots are still quoted at 2.90¢ for Painted, and 3.60¢ @ 3.65 for Galvanized, with the usual difference for carloads.

Pig Lead.—Early in the week small quantities were sold at 3.60¢, but afterward bids of 3.55¢ were successfully made for 200 to 300 tons of Common, considerable sales of Refined also taking place. At the close 3.50¢ was bid, 3.55¢ asked.

Pickands, Brown & Co., of Chicago, and Pickands, Mather & Co., of Cleveland, are the selling agents for the Ohio and Western Coal and Iron Company, one of whose new furnaces, at Floodwood, Ohio, has just been blown in.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, November 19, 1888.

Pig Iron.—During the week under review the local market for Pig Iron has been full of vitality, strong, and at times even buoyant, if not excited. The volume of business has been large, numerous sales being made, both large and small. While there has been a general revival in the demand, the Iron most urgently sought for has been Forge grades. There has been scarcely a mill along the Ohio River and within the territory of Cincinnati which has not figured in the market during the week, if not as buyers at least as applicants. Car builders as well as Pipe manufacturers, and mills as well as machine shops, have contributed something to make evident the confidence prevailing. Mottled, Bright and off grades of Iron are wanted, as well as the better brands and grades, but the offerings are generally small. Several thousand tons of Car-Wheel Iron have been sold on basis of quotations, and also several thousand tons of Foundry grades, supplemented by a number of scattering transactions for various kinds for both present and future delivery, but by far the bulk of the sales have been of Forge Irons, the product of both Ohio and Southern furnaces, the latter stacks taking the lion's share. The aggregate sales of Mill Irons made during the week are estimated at 40,000 tons, one house alone booking orders for over 20,000 tons. These transactions were mostly for long delivery, and factors assert their ability to obtain 25¢ @ 50¢ per ton more for future than for present or near-by delivery. Prices of several grades are higher; a further advance is anticipated. The following are the approximate quotations for the local market cash, f.o.b. Cincinnati:

Hot-Blast Foundry.		
Southern Coke, No. 1 (new classification).....	\$16.25 @	\$16.75
Southern Coke, No. 2 (new classification).....	15.50 @	16.00
Southern Coke, No. 3 (new classification).....	15.25 @	15.50
Ohio Soft Stone Coal, No. 1.....	17.00 @	17.50
Ohio Soft Stone Coal, No. 2.....	15.50 @	16.00
Mahoning and Shenango Valley.....	18.00 @	18.50
Hanging Rock Charcoal, No. 1.....	21.00 @	22.50
Hanging Rock Charcoal, No. 2.....	16.00 @	22.00
Tennessee and Alabama Charcoal, No. 1.....	18.50 @	19.50
Tennessee and Alabama Charcoal, No. 2.....	17.50 @	18.00
Forge.		
Strong Neutral Coke.....	15.00 @	15.25
Mottled Neutral Coke.....	14.00 @	14.25
Gray Forge.....	14.50 @	14.75

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @	25.00
Hanging Rock, Cold Blast.....	22.00 @	25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @	22.00

Manufactured Iron.—There has been some increase in the volume of business, the activity in Pig Iron and the hardening tendency spurring buyers to increased purchases, but prices of the manufactured product have changed but little. Common Bar Iron, 1.90¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3½¢ @ 4½¢ @ lb.

Old Material.—There has been some increase in the demand here for both Old Rails and Wheels, but the offerings have been fair; 400 tons Old Rails sold here at \$23, cash, and about an equal amount of Old Wheels at \$19, spot cash.

Nails.—The trading has been on a lower basis during the week, but there is a fair demand and a better feeling at the close. Jobbing prices are based upon 12d @ 40d, which sell at \$1.95 @ keg, with 10¢ rebate in carload lots, at mills. Steel Nails sell at \$1.95 and Steel Wire Nails at \$2.65 @ keg.

Cleveland.

CLEVELAND, November 19, 1888.

Iron Ore.—During the past week 131,687 tons of Ore were shipped from the Upper Lake ports, bringing the total shipments for the season up to 4,572,913 tons. This amount is 71,741 tons in excess of the total shipments up to a corresponding period last year and 1,016,113 tons in advance of the record for 1886. The shipping season will practically close on December 1. Nearly all of the wooden vessels are already tied up for the winter, leaving only the steel steamers in commission. Two or three cargoes of unsold Ore were unloaded at this port during the week just closed and more will be brought down within the next ten days. But the total amount of Ore not disposed of on the docks at the close of navigation this year is likely to be less than 150,000 tons, as compared with 750,000 tons at the beginning of last winter. When it is taken into account that the last-mentioned stock of Ore has been disposed of during the past season, in addition to the 4,572,913 tons shipped, it can be readily seen that all records have been beaten, despite the depressing influence of a late opening and an uncertain and fluctuating market for Pig Iron. Although the Iron Ore market is far from dull, the activity noticeable is confined to the anxiety of buyers to secure odd lots of non-Bessemer, for nearly all of which fancy prices are secured. Special grades of non-Bessemer Ores have been bought as high as \$5.25, f.o.b. vessels, lower Lake ports, while less valuable brands, which sold in July for \$3.75, are commanding from \$4.25 to \$4.50 @ ton. It would be superfluous to quote prices for Bessemer Ores, for there are, practically, none to be had at any price. An odd lot of Gogebie Bessemer, not particularly rich in Iron, is said to have sold during the week just closed for \$5.85. Lake freights have not advanced, and Ore is still brought from Escanaba for \$1.25, from Marquette at \$1.55 and from Ashland and Two Harbors at \$1.70, rates which, at this season of the year, are considered reasonable.

Pig Iron.—If the result of the election has had any appreciable effect upon the Pig Iron market it has been in the direction of more active inquiry and of firmer quotations. There seems to exist no lack of confidence in the stability of the market. The furnaces are now so overwhelmed with orders that active buying is not expected to begin for 30 days. The foundry and mill men will then come forward for their supplies, and dealers look for

a volume of business with but few precedents. But little Iron is now being sold for delivery in 1889, and furnacemen seem willing to await the opening of the new year, and to trust present indications.

Manufactured Iron.—The mills are running full time in order to fill contracts, but there is little surplus Iron to sell. Bar Iron is firm at 1.70¢, but the stores are unable to obtain stocks, the mills shipping directly to the consumers.

Scrap Iron.—A few sales of Old American Rails at \$24.50 are reported. The water-works trustees sold to-day a big quantity of Cast Scrap for \$13 @ ton.

Sheets.—Stocks have been slightly replenished, and moderate quantities can now be obtained on the basis of \$3 for No. 27, and \$2.80 for No. 24.

Louisville.

LOUISVILLE, KY., November 19, 1888.

Pig Iron.—Buying has been steady during the week, and parties who were slow in making purchases are now compelled to pay an advance. What this is it is almost impossible to tell, but we believe that Iron has advanced fully 75¢ @ ton. Buying throughout the West has not been general, and some points yet feel that the present upward movement cannot be maintained, and that the coming month will show a slight decline in prices. Those who are best situated to know the condition of trade and the amount of stocks now on hand feel that this is a mistake, and that a still further advance will take place. It is not thought the market will have a boom, nor is it considered desirable, but it is felt that present prices will be maintained, and that as orders come in of necessity a slight advance will be made from time to time. We quote as follows:

Southern Coke, No. 1 Foundry, new classification.....	\$16.50 @	\$17.00
Southern Coke, No. 2 Foundry, new classification.....	16.00 @	16.50
Southern Coke, No. 3 Foundry, new classification.....	15.50 @	16.00
Silver Gray, different grades.....	15.50 @	16.50
Gray Forge.....	15.00 @	15.50
White and Mottled, different grades.....	14.00 @	14.50
Hanging Rock Coke, No. 1 Foundry.....	17.00 @	17.50
Hanging Rock Charcoal, No. 1 Foundry.....	20.75 @	23.00
Southern Charcoal, No. 1 Mill.....	16.00 @	17.00
Southern Car-Wheel, standard brands.....	22.75 @	23.75
Southern Car-Wheel, other brands.....	19.00 @	21.00
Hanging Rock, Cold Blast.....	22.00 @	25.00
Hanging Rock, Warm Blast.....	19.00 @	20.00

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, November 20, 1888.

The most important event of the week was the action of the river coal operators, who, at a meeting yesterday, agreed to stop mining indefinitely after December 1st. This action was rendered imperative by the overstocked and depressed condition of the down-river markets, where it is difficult to make sales even at actual lay-down cost.

Pig Iron.—There has been no important change in the situation since our last report. Demand keeps up well, furnaces are all busy, some of them sold several months ahead, and the outlook is favorable for a good healthy trade all winter. Furnacemen think they should have a better price for their product, but consumers aver that they are paying all and even more than it is worth, when present prices of Finished Iron are taken into consideration. The indications warrant the conclusion that there will be a steady consumption throughout the winter, with but little change one way or the other in prices. We quote as follows:

Neutral Gray Forge.....	\$16.00 @	\$16.25, cash.
All Ore Mill.....	16.75 @	17.00, "
White and Mottled.....	15.00 @	15.50, "
No. 1 Foundry.....	18.00 @	18.50, "

No. 2 Foundry.....	17.00 @	17.50, "
No. 1 Charcoal Foundry.....	23.50 @	24.00, "
No. 2 Charcoal Foundry.....	21.50 @	22.50, "
Cold Blast Charcoal.....	25.00 @	28.00, "
Bessemer Iron.....	17.50 @	18.00, "

Some few sales of Gray Forge were reported at \$16.50, cash, but this price can only be secured for an extra Iron, as consumers have no trouble in getting all they want at \$16 @ \$16.25, cash. In regard to Bessemer, while there was a sale of 500 tons reported at \$18, cash, it was an extra lot, as \$17.50, cash, is nearer the mark for the ordinary analysis.

Spiegel.—Spiegel, 20 %, quoted at \$27.50 @ \$28.50, cash, and Manganese, 80 %, \$56.50 @ \$57.50.

Muck Bar.—The offerings continue light, and with some inquiry the market may be quoted firm at \$29 @ \$29.50, cash. Those mills making a specialty of Muck are pretty well sold up, and this accounts for the very limited offerings and strong market.

Manufactured Iron.—There is a continued fair degree of activity. Mills generally are pretty fully employed, and likely to be for some time to come. No change in Prices. Bars, 1.80¢ @ 1.85¢; Plates, 2.20¢ @ 2.25¢; No. 24 Sheet, 2.85¢ @ 2.90¢; Skelp Iron, 1.85¢ @ 1.90¢ for Grooved, and 2.10¢ @ 2.12¢ for Sheared; all 60 days, 2¢ off for cash.

Nails.—The price here is still quoted at card rates, \$1.90 for 12d to 40d, 60 days, 2¢ off for cash, but cutting is still being done elsewhere. Wheeling is reported as having taken an order recently for 10,000 kegs, to go West, at \$1.65, net cash, 2000 kegs to delivered immediately and the remainder at stated intervals thereafter. Some of our manufacturers can scarcely believe that the order would be taken at Wheeling or any where else at the price quoted, but the broker who made the purchase gives it publicity, and, thus far, it has not been contradicted. It is claimed by those in a position to know that the price quoted does not cover actual cost of production.

Wrought-Iron Pipe.—There has been quite a falling off in new business within the past week or two, but the mills generally are still pretty fully employed in working up back orders. Business nearly always falls off at this season of the year, and no material improvement can reasonably be looked for until the spring trade opens up. Prices remain unchanged: Discounts on Black Butt-Welded, 52½¢; do. on Galvanized 45¢; on Black Lap-Welded, 62½¢; on Galvanized do., 52½¢; Boiler Tubes, 60¢ off. Two-inch Tubing, 13¢ ¾ foot, net; 5½ inch Casing, 40¢ ¾ foot, net.

Billets, &c.—Bessemer Steel Billets are quoted at \$29, cash, at maker's mill and Nail Slabs, \$28.50; market for both easier. Domestic Bloom Ends quoted at \$19, and Rail Crops at \$19.50, the latter are reported scarce. A sale was lately made of 4000 tons of Wire Billets to a New England mill.

Old Rails.—There appears to be less inquiry, but with scant offerings prices are still maintained. Sales reported at from \$24.85 to \$25.25, cash. With the advent of cold weather, which cannot now be much longer delayed, the work of lifting will be very much curtailed, and it is expected, therefore, that the offerings will fall off in consequence.

Steel Rails.—Heavy sections are still quoted at \$28 @ \$28.50, cash, at mill; several sales reported at \$28.25. The sale reported some weeks ago in the East by the new mill here at \$27.50, cash, delivered at Buffalo, was for a special lot, which was wanted to test the machinery of the new mill which, as stated elsewhere, will, it is expected, be started up in

January. We learn from good authority that no Rails can be purchased here below prices quoted, and even at these there is but very little margin for profit. It is stated that a good many orders have been booked within the past few weeks by nearly all the mills in the country. New Steel Rails are only worth about \$3 ¾ ton more than Old Iron Rails.

Railway Track Supplies.—Spikes are still quoted at \$2.20, 30 days, delivered; Splice Bars, 1.85¢ @ 1.90¢; Track Bolts, 2.85¢ with square, and 2.95¢ with Hexagon Nuts.

Merchant Steel.—There was a meeting of the Bessemer Steel Association the other day, but there was no change made in prices. Best Brands of Tool Steel, 8½¢; Crucible Spring Steel, 4½¢; Crucible Machinery, 5¢; Open-Hearth do., 2½¢.

Old Material.—There is a fair business at unchanged prices. No. 1 Wrought Scrap at \$21, net ten; Wrought Turnings, \$13 @ \$14; Car Axles, \$25.50 @ \$26.50; Cast Scrap, \$15.50 @ \$16.50, gross ton; Cast Borings, \$12 @ \$13; Old Car-Wheels, \$20.

Naylor & Co., the well-known importers, will shortly open a branch office in the Lewis Block, Pittsburgh. A. S. Hay, a member of the firm, and A. Holland, the prospective Pittsburgh representative, were in this city last week, making the necessary arrangements for the opening of the new office.

Detroit.

WILLIAM F. JARVIS & Co., under date of November 19, report as follows: There has been an improvement in the market since our last report, and a larger number of small orders have been placed. Several inquiries for round lots for delivery after January have been received, some of which will undoubtedly result in orders. The continued scarcity of cars is causing great inconvenience to furnaces that have Iron on hand, as they are unable to ship it on this account, and as a natural consequence consumers are complaining loudly at the delay. The outlook is encouraging and prices are held firm. Navigation on the lakes will soon be closed and this may cause some advance in Lake Superior Charcoal, as only a limited number of furnaces can ship during the winter to Eastern points, as freight rates from upper lake furnaces are too high. We quote for the present as follows:

Lake Superior Charcoal, all numbers.....	\$20.00 @	\$20.50
Lake Superior Coke, all ore.....	19.75 @	20.25
Lake Superior Coke, cinder mixed.....	18.50 @	19.00
Standard Ohio Black Band.....	19.75 @	20.25
Southern No. 1.....	17.75 @	18.25
Southern Gray Forge.....	16.25 @	16.75
Southern Silvery.....	17.00 @	17.50
Jackson County (Ohio) Silvery.....	18.50 @	19.00
Old Wheels.....	20.50 @	21.50

New York.

Office of The Iron Age, 66 and 68 Duane street, NEW YORK, November 21, 1888.

American Pig.—The volume of new business being done is light, and the number of inquiries for forward delivery is not large. Still, the market is steady and the tone healthy. Some propositions have been made for delivery of Southern Iron next year, but it is stated that seilers must take the risk of freights, since the railroads decline to guarantee rates for 1889 delivery to be the same as now—\$4.86 to New York and \$5.11 to Boston. One case has come within our notice where a Southern furnace company have declined to book more than one quarter of a 5000-ton lot, which the consumer was willing to take. We continue to quote Standard to Choice No. 1, \$18 @ \$19; No. 2 Foundry, \$17 @ \$17.50, and Gray Forge, nominally, \$16 @ \$16.50.

Scotch Pig.—The market is very quiet, with prices remaining: Coltness, \$21 @ \$21.50, nominally; Shotts, \$20.75 @ \$21; Langdon, \$21, and Dalmellington, \$20 @ \$20.25.

Spiegeleisen.—No business has been done and prices remain nominally \$27 for German 20 %. Ferromanganese, 80 %, prompt delivery, has sold in small lots at \$54.

Wire Rods.—The market is very dull and weaker. Basic Wire Rods having sold at a delivered price equivalent to \$38.65 at this port. The demand for foreign stock is shrinking more and more, and is now practically confined to the Eastern Wire, Barb Wire and Wire Nail mills which do not roll their own Rods. It is probable that next year the importations will fall off even more. The West is now practically captured by the domestic mills. With the new Rod mill building at Anderson included, the mills of this country will be able to turn out next year somewhere between 300,000 and 350,000 tons. It is urged by importers that they cannot long hold the Eastern trade unless foreign Rods are kept low enough to put Eastern Wire mills in a fair position to hold their own against their Western rivals. They argue that from the standpoint of the foreign Rod maker any attempt to exact high prices would be suicidal. On the other hand it is insisted that for the present foreign Rods are as cheap as they are likely to be so long as the price of Billets abroad remains where it is. Even when the German Rod combination was in existence there was so little margin in rolling Rods that only five or six concerns remained in the business, and even one of the most prominent of them changed one of its mills to light Rails. We quote the market dull at \$38.75 @ \$39 for Basic Rods, with the probability that \$38.50 could be done.

Old Rails.—We hear of a sale of 1200 tons on the line of a road in Western Maryland at \$23, and of a lot of 500 tons at \$23.50, on the cars Jersey City, shipped from Bridgeport, Conn. A number of mills in Eastern Pennsylvania are in the market, but the supply available here is small and generally closely held. We quote \$23 @ \$24 for Tees for large lots.

Scrap.—The market is quiet, but steady, at \$21 for Yard, with few sales reported.

Plates.—Fair orders for Marine Steels have been placed here, and we learn that the Steel Plates for 19 boilers for a Brooklyn sugar refinery were taken by a mill in Eastern Pennsylvania. One of the leading Western mills selling in this market has taken an order for about 2000 tons of Ship and Boiler Plates at Philadelphia, the Angles, Deck Beams, &c., going to an Eastern Pennsylvania mill. We quote Iron Tank, 2.1¢ @ 2.2¢; Shell, 2.3¢ @ 2.44¢; Steel Tank, 2.25¢ @ 2.3¢; Shell, 2.5¢ @ 2.55¢; Flange, 2.65¢ @ 2.75¢, and Fire-box, 3.5¢ @ 4¢.

Structural Iron.—A number of the mills complain of a falling off of orders. Some of the big contracts which nearly every prominent mill had as a *pièce de résistance* have now been filled, only one mill having received additional work of this character lately in the form of about 6000 tons of Brooklyn Elevated construction. The largest Beam mill in the country has gone on single turn. We quote Sheared Plates, 2¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.2¢; Angles, 2.1¢ @ 2.15¢; Tees, 2.5¢ @ 2.6¢, and Channels and Beams, 3.3¢. Foreign Beams can be laid down at about 2.65¢ @ 2.75¢, but are in very light demand.

Bar Iron.—The scarcity and high price of Old Rails have caused some of the mills to which this market is tributary to with-

draw; still the market is not perceptibly stronger. We quote: Carload lots, half extras, 1.7¢ @ 1.75¢ for Common; 1.75¢ @ 1.8¢ for Medium, and 1.8¢ @ 1.9¢ for Refired, with prices for fancy brands running up to 2.4¢ @ 2.5¢. Foreign Hoops are quoted nominally 2.05¢.

Steel Rails.—The event of the week has been the placing of the greater part of the order of the Pennsylvania Railroad; three Pennsylvania mills on the line of the road receiving each 15,000 tons, with the important proviso that they may deliver the Rails at any time during the winter. The railroad generally places at the same time a number of smaller orders in Chicago, Cleveland and Scranton, aggregating about 15,000; so far as we can learn, these have not yet been given out. It is stated that the Rails were placed at \$28 at mill, a figure which the trade regards as somewhat high, considering the market of the past few weeks, and which it is somewhat difficult to explain, even when the fact is considered that the road has the advantage of carrying a very heavy tonnage of raw materials for the manufacture of the Rails. We are informed that one of the mills not on the line of the road has offered to sell at \$27.50. The contracts are of special importance, because at least one of the mills, and possibly others, have made sales to other lines based upon the Pennsylvania price. It is intimated that in the case of at least one mill a balance of last year's order, at a considerably higher price, has been cancelled, by the placing of the new order. We hear of sales to Eastern roads aggregating about 4000 tons, and of 5000 tons to the Pacific Coast. The latter was \$2 under the price at which English Rails were offered, delivered, so that at a lower rate of duty the domestic mill would have been crowded out, even on the basis of the low price of \$27.50 at Eastern mill. In the West a contract of 17,000 tons, to be delivered in about equal parts at Omaha and Kansas City, has probably been placed. The market is firmer, though not without a shade of irregularity, the usual quotation being \$27.50 @ \$28. According to the report of the Board of Control the deliveries up to the 1st of November were 1,029,179 tons, the sales for 1888 delivery being 1,250,740 tons. For 1889 the sales are reported at 116,180 tons up to November 1st, but it is certain that at least 150,000 tons have been placed since then. In regard to the rumors persistently circulated for some time past of a disruption of the Rail Association, or at least of a growing dissatisfaction among some of the members, it may be stated that whatever grounds there may have existed for it are likely to be removed in a few days.

Financial.

While there is visible no strong impetus in business circles—especially in the absence of speculation—in several respects there is an improvement compared with ante-election days. Tariff questions being at least temporarily set at rest, those industries more directly affected manifest greater confidence, and the same holds true of certain branches of trade, notably those identified with the wool product. Many enterprises awaiting the decision at the polls are being pushed forward. Money is easy and no apprehension is felt respecting the immediate future. Contentment among the great railroad corporations still occupies a prominent place in public estimation. The Classification Committee has finished its report, which will conform to the requirements of the Interstate Commissioners, and, in revising classes, most freights have been graded up, so that the railroads must make heavier revenues. Commissioner Fink has called for a telegraphic vote for the adoption of this new

classification, and, from present appearances, the members of the Joint Executive Committee will unanimously approve of it.

The Stock Exchange markets are comparatively dull, with limited transactions. Rumors respecting trunk line troubles and prospects are the chief disturbing factor. It is conceded that railroad business throughout the country has sustained a severe shock, but traffic continues heavy. Shipments east from Chicago for the week were 36,586 tons, an increase of 5630 tons compared with the previous week. On Monday selling orders from London encouraged bear raids, and the trunk line stocks were the principal sufferers. A favorable development in the trunk line situation is the promised adoption by all lines of the recommendations of the Classification Committee, which grade up most classes of freight, and will, it is thought, enable the roads to secure a heavier revenue for hauling the same tonnage. Among other reports is the existence of an agreement designed to protect the roads from alleged infractions of the Interstate law. The New York and New England is receiving some attention, owing to the approach of the annual meeting, and to the anticipated improvement looked for after the opening of the Poughkeepsie Bridge early in 1889, which is expected to increase materially the road's coal traffic. On Monday the market was irregular. It was announced that a meeting of managers of Northwestern and Western railroads had been called in Chicago on Wednesday, to endeavor to formulate an agreement covering all the Western lines. It was also learned from Washington that the war of rates between the trunk lines has received the serious attention of the Interstate Commerce Commission, but that body, while deploring the existing troubles, has failed thus far to find any remedy for them or any authority to exercise any remedy. Judge Cooley, chairman of the commission, says: "In the absence of legal proof of secret reductions of rates we cannot institute suit, as we would be glad to do if testimony were offered to us upon which we could proceed." Members of the Interstate Commission do not believe that Congress will enact any legislation repealing the prohibition of pooling, and they do not think that permission to pool would permanently improve the present situation. They hope that the coming meeting of the trunk line presidents will result in a settlement of the traffic war.

Government bonds were stronger for the 4s, which sold at 128. Quotations are as follows:

U. S. 4½s, 1891, registered.....	107½
U. S. 4½s, 1891, coupon.....	108½
U. S. 4s, 1867, registered.....	128
U. S. 4s, 1867, coupon.....	128
U. S. currency 6s.....	121

The Treasury purchases of bonds continue quite small, partly for the reason that the offerings at the figures the secretary is willing to pay have fallen off materially. The effect upon the financial situation, however, is imperceptible.

The total clearings of 41 cities last week show a decrease of 9.5% compared with the corresponding week last year; outside of New York the decrease is 6.7%. New York decreased 14.1%; Philadelphia, 6.1%; Chicago, 6.9%; Baltimore, 6.1%; Cincinnati, 5.6%; New Orleans, 4.8%; Pittsburgh, 3.9%; St. Paul, 5.6%; Galveston, 21.6%; Wichita, 35.9%; Los Angeles, 35.9%; Duluth, 45.10%; Boston increased 4.9%; St. Louis, 3.9%; San Francisco, 10.9%; Kansas City, 9.4%; Minneapolis, 14%; Omaha, 18.2%; Memphis, 16.9%, and Denver, 27.5%.

The weekly bank statement shows a small but unexpected increase in the surplus reserve, which now stands at \$11,591,000, against \$7,488,000 at the corresponding time last year and \$9,930,000 in the third week of November, 1886.

The loans were contracted \$983,000; specie decreased \$1,288,900; legal tenders are up \$1,234,900, almost equal to the loss in specie. Money is still wanted in the South, but the West has no special requirements. Loanable funds in this market are in better supply, and the demand for commercial paper is good. We quote 60 @ 90 days' indorsed paper at 4½ @ 4¾%; longer dates, 5 @ 5½%; single names, 5½ @ 6%. The Treasury Department issued a circular announcing that no more deposits to retire circulation will be received until December 1, as the \$3,000,000 monthly limit has been exhausted.

Sterling is very firm, owing to the advance of the rate of discount in London. Posted rates are \$4.85½ @ \$4.89.

The Produce Exchange markets generally have a lower tendency. Wheat is lower, with an increasing visible supply and on Tuesday prices fell off 3¢. Flour is dull and lower. The only export business at present is on account of the Lisbon market, the movement having become rather important since the decline. Nearly all the Western millers are now running on half time to permit an absorption of the surplus product, as well as on account of the relatively high price of grain. Corn lower, with liberal sales for export. The demand for wool is phenomenal, sales in Boston during the week having amounted to 8,847,000 lb, the largest ever known, and the advance is at least 2¢ on nearly all grades. Philadelphia carpet manufacturers announced an intended advance in prices, but the alternative of a 10% reduction in wages is now under consideration. New York dry goods jobbers report a healthy trade.

Exports of merchandise from this port during the week were valued at \$8,490,997, making a total since January 1 of \$411,033,625, as compared with \$415,545,000 for the same time in 1887 and \$386,353,000 in 1886. The recent favorable balance of trade is due to the increased exports of cotton, breadstuffs and provisions showing a material decline. In breadstuffs the decline is in wheat only. For the last four months the aggregate of the five principal classes of exports from the United States compare as follows:

	1888.	1887.
Cotton.....	\$48,745,171	\$59,795,471
Breadstuffs.....	43,257,353	53,857,109
Meat and dairy products.....	29,895,542	31,664,068
Cattle and hogs.....	4,733,235	3,388,674
Mineral oils.....	17,351,359	16,426,381
Totals.....	\$143,982,760	\$165,131,703

The imports of specie at this port during the week were \$393,000; exports nominal.

Metal Market.

Copper.—Spot Chili Bars have fluctuated 2/6 from day to day, closing the same as a week ago, £78. 2/6, but futures declined from £79 to £78. 15/, good merchantable brands giving way from £78. 2/6 to £78, and Best Selected from £83 to £82. 10/. Sales, 425 tons. Here the same listless tone and almost total lack of trade and speculation has continued, only 25,000 lb, November, being sold at 17½¢, the quotation for November, December and January being 17¢ @ 17½¢, spot nominally 17½¢, and casting brands 16¢ @ 16½¢.

Tin.—During the week under review spot Straits improved in London from £102. 12/6 to £103, and futures from £101. 7/6 to £101. 17/6, the sales summing up 1110 tons. There has been greater animation here, some 150 tons changing hands at 22.45¢ January, 22½¢ February, and spot at 22.35¢. The Straits shipped this way, November 1 to 15, 200 tons, against none last year, and to England 500 tons, against 800; to England altogether since January 1, 16,000, against 13,300, and to this country 3150, against 4100, as per cable from Gilfillan, Wood &

Co. to Mr. Charles Nordhaus, East-India agent, 89 Water street, New York. *Tin Plates*.—The demand during the week has again been quiet, the trade holding off their orders, as the market has been a declining one. We quote at the close, large lines, $\frac{1}{2}$ box: Siemens-Martin Steel, Charcoal Finish, \$4.90 @ \$5.75; Coke Finish, \$4.70; Ternese, \$4.10 @ \$4.25; Bessemer Cokes, \$4.25 @ \$4.35; and Wasters, \$4.15. Cokes are 13/3 @ 13/6 at Liverpool.

Lead.—Our market has been moderately active only, some 500 tons being sold in the open market at 3.65¢ @ 3.70¢, and 116 tons on 'Change, this also being the closing quotation, at which the market winds up quiet, while in St. Louis there is steadiness, but also a tame state of affairs, at 3½¢. London is 2/6 lower for the week, and quotes Soft Spanish £13. 2/6, and English Pig £13. 12/6.

Spelter.—Has been dull and featureless at 5½¢ @ 5¼¢ Common Domestic, and 6¢ Silesian, nominally, the London market having given way from £18. 12/6 to £18. 2/.

Antimony.—Hallett has improved £1 in London, to £44, while here a fair demand has prevailed at 10½¢, and for Cookson at 12½¢.

New York Metal Exchange.

The following sales are reported:

THURSDAY, November 15.		
30 tons Tin, January	22.30¢	
10 tons Tin, February	22.30¢	
25,000 lbs. Lake Copper, November	17.50¢	
FRIDAY, November 16.		
100 tons Lead (on dock)	3.65¢	
SATURDAY, November 17.		
10 tons Tin, December	22.45¢	
MONDAY, November 19.		
50 tons Tin, February	22.50¢	
40 tons Tin, January	22.45¢	
TUESDAY, November 20.		
16 tons Lead, January	3.75¢	

Coal Market.

The Anthracite Coal trade is dull and weak, under excessive production and decreasing demand. All sizes are now in full supply, even Stove having become abundant. As a consequence reports are freely circulated of cuts made in order to stimulate sales. The one phenomenal fact of the week, and which cannot fail to engage attention, is the enormous shipments from the mines, the Wyoming region especially seeming to be in full activity, and this in the face of the official announcement that the production for October was in excess of any month in the history of the trade, aggregating no less than 4,187,000 tons. For the week ending November 17 the total is 902,530, an increase of 126,000 over the previous week and 144,500 tons compared with the same week in 1887. Schuylkil is increased 10,000 tons, Lehigh 12,000 tons and Wyoming 103,000 tons. For the year since January 1 the aggregate is 33,861,000 tons, an increase of 3,386,000 compared with the same time last year. The Reading Company will mine on full time until the end of the month, when it will come down to three quarters time, and probably all the other companies with it. The four new collieries that the Reading Coal and Iron Company proposes to open will be in operation about a year hence, making in all an addition of 1,000,000 tons per annum. The new improvements will cost about \$150,000. It should be noted that despite the heavy output from the Coal regions the stock on hand at tidewater shipping points October 31 was 359,000 tons, a decrease of about 12,000 tons during this month. Prices are nominally unchanged, as follows: Hard

White Ash, Lump, \$4.50; Broken, \$4.15; Egg, \$4.40; Stove, \$4.65; Chestnut, \$4.55; Free-Burning, f.o.b., Broken, \$3.95; Egg, \$4.30; Stove, \$4.65; Chestnut, \$4.65; Pea, \$2.75.

It is understood that the Coal operators assume that the market will, with Thanksgiving Day interruption, take all the Coal arriving at tidewater, but they will probably take action on the 29th to restrict.

Bituminous Coal is easier, with signs of an approaching overstock and possible temporary suspension at the mines.

The Lehigh Valley Railroad, in the suit brought against it by Cox Brothers & Co., has filed an answer denying nearly everything that is stated in the complaint, but admits carrying Bituminous Coal for but little more than half the price of Anthracite per ton per mile, and states that it costs more to load and unload Anthracite Coal than it does Bituminous.

At a meeting of Pittsburgh operators on Monday it was unanimously decided to shut down all the Monongahela River lines for an indefinite period.

The Poughkeepsie bridge will be opened for business February 1, taking Anthracite from Pennsylvania direct to the East side of the Hudson.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, Nov. 21, 1888.

The recent advance in the syndicate's nominal prices for Copper, followed as it has been by a partial reaction, has tended to strengthen the belief that the interest mentioned can fully maintain prices only by following their former policy of requiring a guarantee that Copper purchased from them will not be resold. As it is, smelters who purchased prior to the late advance are underselling present syndicate prices, and it is believed that they will continue to do so for some time if these figures are maintained. Some significance is, however, attached to the fact that the supply has increased only 1000 tons the past fortnight—the smallest accumulation for any two weeks since January. This is attributed, in part, to the withholding of supplies at mines owned by the syndicate or members of the body. Copper furnace material shows, relatively, greater firmness than Bars, but the advanced prices asked early in the month have not been realized. James Lewis & Son report sales, since the 1st inst., of 2000 tons Anaconda Matte at 15/6, to arrive, delivery at Swansen, and 87 tons Matte, made from American Ore, at 15/ $\frac{1}{2}$ unit.

It is stated, on apparently good authority, that English capitalists have made an offer of £1,000,000 for the Sotiel Copper mines, Portugal.

Speculative operations in Block Tin have been on a larger scale, and prices have hardened somewhat the past few days. The "bear" interest has sold futures with more or less freedom, and express confidence in heavy shipments from the East the next few months, swinging prices in their favor. The "bull" party, however, appear inclined to make a stubborn contest.

Business in Tin Plate has been disappointing. Makers have granted concessions on prices to attract orders for forward deliveries, but the response from buyers is thus far slight. The production is now

very large, and promises to be even greater in the near future, additions to old mills and the erection of new plant having enlarged the capacity considerably. A site has been selected for the large works to be erected at Llanelly, Carmarthenshire.

In Pig Iron warrants operations have been on a moderate scale. Although stocks in Connal's stores are still increasing, the probability of enforced restriction of output consequent upon a scarcity of coal restrains bear sales. The large stocks of warrant Iron and the high rate of interest for money, on the other hand, adversely affect outside speculative purchases, causing as they do the belief that prices are likely to decline. Purchases for consumption are very fair, but the export trade is moderate. Only slight changes have taken place on makers' brands of Scotch Iron, but Middlesboro' and Hematites are lower.

A new brand of Iron, styled Sellivara, the product of Swedish Ores, has been placed on the market. Sales of this article are said to have been made at 55/ for Forge grade, and 57/6 for qualities suitable for foundry work.

In Shipbuilding and Railway Steel there continues to be a brisk business; prices very strong on the former, but still somewhat uneven in the instance of Rails. Billets also continue in good demand, but Blooms, Slabs, Rods, &c., are quiet. The Moss Bay Company have secured an order for 14,000 tons of Rails for the Bengal and Nagpur railway. The Crawshaw Steel Works and the Star Iron Works have been started up.

The report is again in circulation that a syndicate is forming to control the rolling mills in Great Britain and on the Continent.

Scotch Pig.—There has been only a moderate business, but prices hold fairly steady.

No. 1 Cofness, f.o.b. Glasgow	49/
No. 1 Summerlee, " "	49/6
No. 1 Gartsherrie, " "	47/
No. 1 Langloan, " "	48/6
No. 1 Carnbroe, " "	43/6
No. 1 Shots, " at Leith	48/6
No. 1 Glengarnock, " Ardrossan	47/6
No. 1 Dalmeilington, " "	42/3
No. 1 Eglinton, " "	41/
Steamer freights, Glasgow to New York, 6/6, Liverpool to New York, 10/.	

Cleveland Pig.—The market has been dull and prices have again weakened. No. 1 Middlesboro', G.M.B., 36/; No. 3 do., 33/6 @ 33/9.

Bessemer Pig.—Prices are irregular and weak, the demand being slow and supply liberal. West Coast brands, mixed numbers, 44/3, f.o.b. shipping point.

Spiegeleisen.—Transactions have been of moderate volume, but offerings are moderate and prices steady. English 20 % quoted 80/, f.o.b. N. W. England shipping point.

Steel Rails.—There continues to be a lively business, but orders are filled at former prices. Standard English sections quoted at £3. 18/9, and light sections £4. 2/6 @ £4. 7/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Only a moderate business, and prices unchanged. We quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

Scrap Iron.—There is but little demand and the sales making are at former prices. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

Steel Billets.—The demand continues fairly active. Makers are well sold ahead and firm on prices. Bessemer, 2½ x 2½ inch, £4. 2/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—Moderate sales making at about former prices. Bessemer, £4, f.o.b. at N. W. England shipping point.

Old Rails.—Very little doing in these. Prices are nominal in a good measure. Tees quoted at £3. 3/9 @ £3. 5/, and Double Heads £3. 8/9 @ £3. 10/, c.i.f. New York.

Crop Ends.—The market quiet, but steady. Bessemer quoted £2. 7/6 @ £2. 10/, f.o.b.

Tin Plate.—There has been a fair business at barely steady prices. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade.....	15/ @ 15/6
IC Bessemer steel, Coke finish.....	13/9 @ 14/
IC Siemens.....	13/9 @ 14/
IC Coke, B. V. grade.....	13/3 @ 13/6
Charcoal Terme, Dean grade.....	12/ @ 12/6

Manufactured Iron.—In most branches there is a fairly active trade and prices remain firm. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars.....	£ s. d. @ 8 2 6
Common.....	@ 5 10 0
Staff. Bl'k Sheet, singles.....	@ 7 10 0
Welsh Bars (f.o.b. Wales).....	5 0 0 @ 5 2 6

Tin.—Operations have been on a more liberal scale, and prices, while irregular, show greater firmness. Straits quoted at £101, spot, and £101. 15/ for three months' futures.

Copper.—Business slow, and prices somewhat unsettled. Chili Bars, £78, spot, and £78. 10/, three month's futures. Best Selected, £82.

Lead.—The market is very quiet, but steadier. Soft Spanish, £13. 2/6.

Spelter.—Demand has been light, and prices are rather lower. Silesian, ordinary, £18. 2/6 @ £18. 7/6.

Foreign Markets.

FOURVALENTS.	Cents.
Franc, Poseta or Lira.....	36.3
Florin (Netherlands).....	40.2
Forth (Austria).....	35.2
Milreis (Portugal).....	51.8
Milreis (Brazil).....	54.6
Mark (Germany).....	23.8
Pounds.....	2.205
Shilling.....	2.205
Picul.....	134.

CHILE.

VALPARAISO, September 14, 1888.—**Copper.**—has been fluctuating very little, in consequence of the firm cable reports, and what little change there was was due to the varying exchange. Sales amounted to 18,759 quintals at \$29.55 @ \$30.30, which at 26½d, and taking \$29.65 as first cost, equals f.o.b., without freight, per steamer, £77. 6/2. **Nitrate.**—A good inquiry has prevailed, both for immediate shipment and September and October, but as very little Nitrate was immediately available, and suitable vessels were scarce, sales were limited to 170,000 quintals 95% at \$2.80 and 64,000 quintals 96% at \$2.85 @ \$2.87½. The price of \$2.80 equals, cost and freight, ½ cwt., 8/8½. November and December delivery was offered at \$2.80, without pressure. The closing quotation for 96% is \$2.87½. August shipments to Europe amounted to 57,000 tons, and to the United States to 5000. There remained loading on the 1st inst., for Europe, 75,800 tons, and for the United States, 8000 tons. Charters during the fortnight reached 34,810 tons for Europe and 2270 tons for the United States. **Coal.**—Cargoes arrived were by no means easily saleable, so that for Newcastle 25/ @ 26/ per ton had to be accepted. July sail brought 28½; later shipments, such as August and September, cannot be had under 35/ @ 36/, as, with the prevailing high freights, not many arrivals are likely. **Exchange.**—Bills on London 90 days' sight, have been sold at 26½d @ 26½d.—Weber & Co.

EAST INDIES.

PENANG, October 4, 1888.—**Tin.**—During the fortnight there were receipts of, alto-

gether, 10,500 piculs, of which Europeans took 4780 and Chinese about 6000. The market opened at \$38.45 per picul, at which Chinese bought; subsequently there was an improvement to \$38.92½, but, later on, a rising exchange was followed by a reaction in Tin, the latter declining to \$38.60, at which Chinamen again bought to-day, the demand for China remaining quite lively. *Gum Benjamin*—of the better descriptions—has been taken, to a moderate extent, at \$53 @ \$56 per picul.—Schmidt, Kustermann & Co.

SWEDEN.

STOCKHOLM, November 7, 1888.—**Iron Ore.**—The general impression in Sweden and Norway is that the Lulea-Ofoten Railroad is going to prove a paying affair anyway, even if the cost of building should exceed the estimate so far made considerably. If the export of Ore at any time reaches 1,500,000 tons, the original investment of capital and preferred bonds would begin to draw interest, and if the export should further increase the shareholders will receive dividends. The railway all the way to Gellivara measures 132 English miles in length and is in working order, but there are great engineering difficulties a distance of 22 to 25 miles over the mountains on the track to Ofoten, a distance of 176½ English miles, the difficult portion being estimated to cost something like £20,000 per mile, while the rest will cost probably £4000 per mile. After the latter railway of 176½ miles is finished the owners of the mines and railroad will be able to lay down the ton of Ore at 16/ in England, and at such a price, or more, millions of tons can be easily sold. In England the Gellivara line, so far as built, is considered well constructed, whereas the Swedish engineers are of a different opinion, condemning as they do the building on frozen ground. The Ore shipping season at Lulea has been brought to a close now for the current year, shipments aggregating 54,200 tons in 30 steamers.—*Dagbladet*.

RUSSIA.

ODESSA, November 8, 1888.—**Petroleum.**—Baron Rothschild, head partner of the Parisian house, is at present at Baku for the purpose of personally inspecting the Naphtha works on the spot and determining what may be done in order to extend all the business of the Caspian Black Sea Naphtha Company. He also intends buying still larger tracts of land in Transcaucasia, not only for the Oil that may exist there, but also for the laying out of vineyards and the making and exporting of wine after the French fashion. So far the borings for Oil at Tiflis have produced no result. The depth of 40 fathoms has been reached, but the pressure of water is such that progress is slow. That Oil exists on the spot the natural wells abundantly prove. Perhaps a greater chance of striking Oil may be in the neighborhood of Baku. There are Oil wells between Tioneti and Tiflis all the way down to the Caspian, but it has yet to be shown that the borings will prove productive in the locality. Some boring is also going on at Elizabetopol and vicinity, with no better result so far.—*Odessa Gazette*.

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from November 10 to November 17, inclusive, and from January 1 to November 17, inclusive, were as follows:

Iron and Steel.			
	Nov. 10 to Nov. 17.	Nov. 10 to Nov. 17.	Jan. 1 to Nov. 17.
	Tons.	Tons.	Tons.
Iron Ore: A. Earnshaw.....	250	6,937	
Pig Iron: Crocker Bros.....	1,565	13,357	
N. S. Bartlett.....	300	5,300	
Dana & Co.....	150	1,051	
James Williamson & Co.....	100	5,300	
R. F. Downing & Co.....	100	300	
Spiegeleisen: Crocker Bros.....	208	11,313	
Kessler & Co.....	120	120	
J. Abbott & Co.....	100	350	
Dana & Co.....	20	3,073	
Steel: Thos. Prosser & Son.....	72	160	
W. F. Wagner.....	43	1,347	
R. H. Wolff & Co.....	33	618	
M. Cohn.....	15	235	
J. Abbott & Co.....	13	562	
Temple & Lockwood.....	8	22	
Montgomery & Co.....	5	92	
F. S. Pilditch.....	4	486	
Newton & Shipman.....	3	145	
R. F. Downing & Co.....	2	220½	
Steel Rods: Dana & Co.....	800	5,861	
Naylor & Co.....	350	18,063	
A. Heyn.....	100	1,612	
J. Abbott & Co.....	100	3,990	
Cary & Moen.....	40	864	
Steel Plate Cuttings: Naylor & Co.....	21	168	
Steel Sheets: Pierson & Co.....	26	1,010	
C. S. Mersick & Co.....	10	137	
Steel Bars: R. H. Wolff & Co.....	10	29	
Steel Tubes: J. S. Leng & Co.....	10	52	
Rivet Rods: J. Abbott & Co.....	201	201	

Sheet Iron: T. B. Coddington & Co.....	59	1,339
Old R. R. Steel: A. Milne & Co.....	112	112
Wire Rods: J. A. Roebling's Sons.....	25	174

Tin Plates.

	Boxes.	Boxes.
A. A. Thomsen & Co.....	11,355	141,302
Phelps, Dodge & Co.....	10,646	517,767
Dickerson, Van Dusen & Co.....	8,843	277,814
T. B. Coddington & Co.....	8,413	158,918
N. L. Cort & Co.....	7,349	104,452
Bruce & Cook.....	3,410	92,128
Central Stamping Company.....	2,693	34,830
G. B. Morewood & Co.....	2,437	48,162
Pratt Mfg. Co.....	1,921	156,062
R. Crooks & Co.....	1,906	64,916
Hy. Whittemore & Co.....	950	47,426
Wolff & Roesing.....	938	85,896
Merchant & Co.....	937	21,776
E. S. Wheeler & Co.....	774	9,023
Corbiere, Fellows & Co.....	591	7,984
Somers Brothers.....	583	1,351
Lalanc & G. Mfg. Co.....	449	5,192
S. Shepard & Co.....	271	19,029
C. S. Mersick & Co.....	221	6,481
American Screw Company.....	196	196

Metals.

	Pounds.	Pounds.
Tin: Muller, Schall & Co.....	980,647	11,136,060
Phelps, Dodge & Co.....	302,285	2,684,842
Bidwell & French.....	224,354	401,224
Naylor & Co.....	168,375	3,046,525
Jas. E. Pope, Jr.....	112,127	562,923
A. A. Thomsen & Co.....	44,704	233,697
American Metal Co.....	22,414	3,011,242

Irons and Metals Warehoused from November 10 to November 17, inclusive:

	Tons.
Charcoal Iron: A. Milne & Co.....	75
Iron Wire Rods: A. Milne & Co.....	24

Hardware, Machinery, &c.

Ansonia Brass and Copper Co., Mds., cs., 6	
Adams, E. W. & Co., Mach'y, cse., 1	
Baldwin Bros. & Co., Gun Barrels, cs., 8	
Baker, Hermann & Co., Mds., cs., 5; Arms, cs., 26	
Barbour Bros. & Co., Mach'y, pkgs., 24	
Curley, J. & Bro., Mds., cs., 5	
Clark, Geo. A. & Bros., Mach'y, cs., 1	
Clark Thread Company, Mach'y, cs., 104	
Dudley, W. H. & Co., Mach'y, cse., 1	
Erie Despatch, Mach'y, cs., 19	
Field, Alfred & Co., Arms, cs., 3; Skates, cs., 19	
Folsom, H. & D. Arms Co., Arms, cs., 32	
Foreign Express Co., Railway Material, pkgs., 154	
Furman, H. C., Arms, cs., 3	
Gurney, Fred. H., Mds., cs., 3	
Hartley & Graham, Arms, cs., 40	
Hansel, Bruckman & Co., Machine parts, cs., 6	
Ismay, J. Bruce, Brass Tubes, 1000	
Lau, J. H. & Co., Arms, cs., 18	
Merch. Desp. Company, Arms, cs., 7	
Mosle Bros., Mach'y, bxs., 2	
Niles Tool Works, Mds., cse., 1	
Pim, Forwood & Co., Chains, 40	
Schoverling, A., Arms, cs., 40	
Schoverling, Daly & Gates, Arms, cs., 7	
Sheldon, G. W. & Co., Cutlery, cse., 1; Mach'y, cs., 1	
Schmidt, Wm., Ironwork, csk., 1	
Taylor, Thos., Mds., cs., 7	
Van den Toorn, Arms, cs., 13	
Williams & Whitney, Anvils, 11	
Ward, Asine, Mds., cs., 5	
Wilmerding, Hoguet & Co., Hdws., cs., 25	
Wiebusch & Hilger, Lim., Arms, cs., 7	
Wright, Peter & Co., Arms, cs., 18; Chains, cks., 32; Arms, cs., 2	
Order: Mach'y, cs., 2	

Exports of Metals.

	Nov. 10 to Nov. 17.	Nov. 10 to Nov. 17.	Jan. 1 to Nov. 17.
	Pounds.	Pounds.	Pounds.
Copper: J. Abbott & Co.....	337,500	13,020,030	
Lewisohn Bros.....		4,041,522	
F. A. Lomal.....		2,581,293	
American Metal Company.....	26,429	6,018,291	
G. H. Nichols.....		223,939	
J. Bruce Ismay.....		112,000	
S. Mendel.....		560,000	
Ledoux & Co.....		110,275	
Muller, Schall & Co.....		430,000	
Copper Queen Con. M. Company.....		224,034	
J. Kennedy, Tod & Co.....		112,036	
H. Becker & Co.....		1,250	
Orford C. & S. Rfg. Company.....		449,881	
Robt. M. Thompson.....		125,000	
Thos. J. Pope, sons & Co.....		1,451,130	
Williams & Terhune.....		90,320	
J. Parsons & Co.....		430,000	
Naylor & Co.....		448,809	
Bridgeport Copper Company.....		112,000	
C. Herold.....		250,000	
Phelps Bros.....		6,250	
R. W. Jones.....		189,984	
Ladenburg, Thalmann & Co.....		229,371	
W. H. Crossman & Bro.....		4,000	
R. Crooks & Co.....		1,000	
Copper Matte: Williams & Terhune.....	109,685	86,663,429	
Lewisohn Bros.....		3,021,610	
American Metal Company.....	436,384	4,516,988	
J. Abbott & Co.....		357,447	
C. Ledoux & Co.....		930,800	
F. W. J. Hurst.....		184,288	
G. H. Nichols.....		722,777	
H. T. Nichols & Co.....		180,985	
Kunhardt & Co.....		41,652	
Copper Ore: Williams & Terhune.....	882,550	882,550	
American Screw Company.....	230,685	230,685	
Lead: Joseph Gillet.....	684,621	1,137,895	
Old Copper: Burgess & Co.....	22,237	651,574	

Hardware.

The demand continues in moderate volume, winter and other seasonable goods constituting a good portion of the business. While a confident feeling prevails in the trade and business throughout the country is generally satisfactory, the time of year has been reached when merchants have generally supplied themselves with goods for the trade of the next few months, and orders are in many cases principally for small quantities of Hardware to complete their assortments. Prices remain very steady, and in goods that lie near the raw material there are indications of increasing firmness, especially in the fact that manufacturers are indisposed to accept orders for such goods the execution of which is deferred beyond the first of the year. This is regarded as a favorable symptom, and indicates the probable wisdom of placing orders for such goods, on many of which low prices are now ruling.

Wire Nails.

There is little change in the general situation, quotations on Standard Nails remaining as before. Some of the manufacturers are issuing lists for the goods in papers, in which the list prices are advanced 2 cents per pound, with announcement of a deduction of 1 cent per pound from the list on Nails packed in 25-pound boxes, and of 2 cents per pound on the Nails packed in 100-pound kegs. Other manufacturers retain their lists as before on the basis of 100-pound packages, with advances of 1 and 2 cents, respectively, for 25 and 1 pound packages.

Cut Nails.

The irregularities lately alluded to are less pronounced. They grew largely out of the fact that one or two smaller mills were closing out Nails previous to stopping their manufacture, at least for the present, or to turning to other branches, like the manufacture of Muck Bar, either for the open market or for neighboring mills engaged in other lines. They have led, however, to considerable inquiry for forward delivery, say 60 to 90 days, though so far as we are able to ascertain little business of this kind has been done. We quote \$1.80 to \$1.90 for carload lots and \$1.90 to \$2 for small lots from store.

Miscellaneous Prices.

The Sandpaper market continues unsettled, materially lower prices being quoted than those which prevailed previous to the breaking up of the combination, as announced in last week's issue. The competition between the different manufacturers promises to be animated. As a general price on small quantities, discount 35 to 40 per cent., may be named, with a discount 45 per cent. on 50 reams, and of 50 per cent. on 100 reams.

Mill Roving Cans are now offered as follows by the Union Indurated Fibre Company, of New York, at the following prices:

	Per doz.
10 inches diameter, 36 inches deep...	\$33.00
10 " " 33 " " "	31.00
10 " " 30 " " "	30.00
12 " " 36 " " "	36.00
12 " " 33 " " "	34.00
12 " " 30 " " "	32.00
14 " " 36 " " "	48.00
14 " " 33 " " "	45.00
14 " " 30 " " "	42.00
17 " " 36 " " "	72.00
17 " " 33 " " "	66.00
17 " " 30 " " "	60.00

These are described as light, strong, and having the generally superior characteristics of the ware. They are in use in some of the Eastern mills, and giving excellent satisfaction. They are also described as specially adapted for use as Store Barrels for Pickles, Seed, Flour, and

also for use about restaurants, hotels and home for offal barrels. Covers of the same material are also manufactured.

November 16 the following revised prices of Shot were announced, subject to the usual discount of 2 cents per bag of 25 pounds if paid within five days from receipt of bill:

Drop, per bag, 25 pounds.....	\$1.25
Drop, per bag, 5 pounds.....	.30
Buck and Chilled, per 25-pound bag.....	1.48
Buck and Chilled, per 5-pound bag.....	.35

Notwithstanding this decline in price it is a question whether the market is yet settled, the probability being that there will be another reduction provided Lead does not advance beyond the figures now ruling, as there is more than the usual difference between the raw material and the finished product.

The following is the list of Perfection Padlocks manufactured by the Ames Sword Company, Chicopee, Mass., which are alluded to in their announcement on page 43. The Padlocks, up to No. 150, are subject to a discount of 40 per cent., and No. 150 and upward to a discount of 50 per cent.:

No.	Size, inch.	Kind.	Per doz.
50	3/4	Plain Brass Padlocks (Dog Collar), 6 Levers, 2 Keys, Small Shackle.....	\$4.50
50 1/2	3/4	Plain Brass Padlocks (Dog Collar), 6 Levers, 2 Keys, Large Shackle.....	4.50
51	3/4	Plain Nickel Padlocks (Dog Collar), 6 Levers, 2 Keys, Small Shackle.....	6.00
51 1/2	3/4	Plain Nickel Padlocks (Dog Collar), 6 Levers, 2 Keys, Large Shackle.....	6.00
75	3/4	Plain Brass Padlocks, 6 Levers, 2 Keys.....	5.00
76	3/4	Plain Nickel Padlocks, 6 Levers, 2 Keys.....	6.50
77	3/4	Brass Padlocks with Clevis Drop and 31-inch Chain, 6 Levers, 2 Keys.....	9.00
78	3/4	Nickel Padlocks with Clevis Drop and 31-inch Chain, 6 Levers, 2 Keys.....	11.00
100	1	Plain Brass Padlocks, 8 Levers, 2 Keys.....	6.00
101	1	Plain Nickel Padlocks, 8 Levers, 2 Keys.....	8.00
102	1	Brass Padlocks with Clevis Drop and 12-inch Chain, 8 Levers, 2 Keys.....	9.00
103	1	Nickel Padlocks with Clevis Drop and 12-inch Chain, 8 Levers, 2 Keys.....	11.00
150	1 1/2	Plain Cast Bronze Padlocks, 8 Levers, 2 Keys.....	11.00
152	1 1/2	Plain Cast Bronze Padlocks with Staple and 10-inch Chain, 8 Levers, 2 Keys.....	12.00
187	1 1/2	Plain Cast Bronze Padlocks, 8 Levers, 2 Keys.....	12.00
188	1 1/2	Plain Cast Bronze Padlocks with Staple and 10-inch Chain, 8 Levers, 2 Keys.....	13.00
225	2 1/4	Plain Cast Bronze Padlocks, 8 Levers, 2 Keys.....	13.00
226	2 1/4	Cast Bronze Padlocks with Spring Drop, 8 Levers, 2 Keys.....	14.00
227	2 1/4	Plain Cast Bronze Padlocks with Staple and 10-inch Chain, 8 Levers, 2 Keys.....	14.00
228	2 1/4	Cast Bronze Padlocks with Spring Drop, Staple and 10-inch Chain, 8 Levers, 2 Keys.....	15.00
250	2 1/2	Plain Cast Bronze Padlocks, 8 Levers, 2 Keys.....	15.00
252	2 1/2	Plain Cast Bronze Padlocks, Clevis Drop and 10-inch Chain, 8 Levers, 2 Keys.....	16.00

McNiece's Ice Creeper, manufactured by William McNiece, 515 Cherry street, Philadelphia, Pa., is sold at \$15 per gross, subject to a discount of 10 per cent.

The All-Steel Grip Ice Creepers, manufactured by the Penn Lock Works, Philadelphia, for whom W. H. Jacobus & Co., 90 Chambers street, New York, are agents, and illustrated on page 802, are sold at \$3 per dozen pairs, subject to a discount of 33 1/3 per cent.

The James L. Haven Company, Cincinnati, Ohio, call our attention to a typographical error in the statement of their prices given in our issue, 1st inst., in which Ox Shoes were quoted at 5 1/2 cents per pound, instead of 6 1/2 cents, the correct figure.

Items.

C. F. Guyon & Co., 99 Reade street, New York, have been appointed agents for the Niles Mfg. Company, Chicago, Ill., and are thus offering the Niles' Double-Acting Spring Hinges. These Hinges are fully described in the circular of the company, which illustrates their special features, attention being called to the advantages possessed by them.

E. C. Atkins & Co., Indianapolis, Ind., have issued a revised edition of their "Saws and Saw Tools." It contains 128 pages of matter revised to date and showing the recent additions to their line. It relates to Circular, Band, Gang, Rip, Cross-Cut and other Saws, Anvils, Straight Edges, Hammers and Saw Tools for saw-makers' use and a full line of Mill Supplies and Saw Mill Specialties. A valuable feature of the book will be found in the full instructions with illustrations in regard to the use and care of Saws, which will be of service to sawyers, filers and those using these goods. They also refer to their branch house in Memphis, Tenn., where they carry a full line of Saws, Saw Tools and Mill Supplies. A copy of this book will be sent on application to any sawyer or lumberman.

The Union Indurated Fibre Company, of New York, are calling the especial attention of their trade at this season to their holiday novelties. In Umbrella Stands or Holders of this material they offer several styles of decoration. Pa-Crusta, Mosaic Inlay (wood effect), hand decorated and plain for home decoration. Waste-Paper Jars or Scrap Baskets, with those same decorations, are also finding a large sale.

On page 42, M. M. Buck & Co., St. Louis, Mo., advertise that they have for sale a very complete and desirable Malleable and Gray Iron Foundry. Those interested are wanted to correspond with the company, and they inform us they are desirous of closing it out at the earliest possible moment.

The Skillman Hardware Mfg. Company, Trenton, N. J., in their descriptive catalogue give prices and descriptions of their extensive line of Mineral, Porcelain, Jet, Bronze Metal and Wood Door Knobs, together with a number of Builders' Hardware specialties. Their exceptionally large variety of Door Knobs will be noticed, as well as other goods. In addition to those represented in the catalogue, they have recently enlarged their assortment by a number of Shutter Knobs, Hook Shutter Bars and Straight Reversible Shutter Bars.

John P. Lovell Arms Company, Boston, Mass., have issued a new catalogue of their Guns, Rifles, Revolvers, Fishing Tackle, Sporting Goods, &c. It is of interest as showing some standard lines with recent novelties. Among these we notice the Springfield Roadster and Bean's Breech-Loading Gun Case.

Walbridge & Co., Buffalo, N. Y., issue a convenient pamphlet devoted to Sleigh Bells, Snow Shovels, Soapstone Foot-Warmers, Skates, Hand Sleighs, &c. It also calls attention to the Never-Slip Horseshoes.

In addition to the agency for the Sequatchee Hoe and Tool Company, held by H. S. Jackson & Co., Nashville, Tenn., to which we referred in our last issue, they announce also those of the American Tube and Iron Company, Benwood Iron Works, Baldwin Locomotive Works, J. H. Sternbergh & Son, Oliver Bros. & Phillips, Oliver & Roberts Wire Company, W. P. Townsend & Co., and others.

Paine, Diehl & Co., Philadelphia, Pa., announce that they control the sale and manufacture of the Keystone Beaters, and

will offer them to such of the trade as agree to maintain prices. The success of the plan which they have adopted in showing the Egg Beaters in operation is referred to, and a constant and increasing demand is reported.

The R. Wallace & Sons Mfg. Company, Wallingford, Conn., have issued a new and exquisitely printed catalogue of their Sterling Silver-Ware, Nickel Silver-Ware, Fine Table Cutlery, &c. The production this year of a very large number of wholly new patterns is referred to as requiring an entirely new catalogue, and it is evident that many original designs are represented in this volume. The illustrations given being finely engraved and on paper of exceptionally excellent quality, exhibit the goods very satisfactorily. The catalogue is divided into the following departments: Silver-Plated Ware, which represents a large variety of articles, occupying about 50 pages; Sterling Silver-Ware, with illustrations, without prices; Fine Table Cutlery, Cast-Steel Silver Plated, of which a variety of patterns is shown, many of which are new and exceedingly attractive, and Novelties in Steel in cases, representing an interesting line of Nut Picks, Fruit Knives, Coffee Spoons, Button and Glove Hooks, Pocket Fruit Knives, Nut Cracks, &c. A separate catalogue refers to Cast-Steel Spoons, Forks, &c., Silver Plated and also Tinned.

The Porter Mfg. Company, Burlington, Iowa, issue a price list of Porter's Patent Window and Door-Screen Corners, Sticks for Frames, &c., and the Queen City Adjustable Window Screen.

Tendencies in Trade.

We continue below extracts from recent letters from Hardwaremen in which our correspondents more or less fully allude to the present condition of trade as divided between manufacturers and jobbers. It will be seen that in the letters given a considerable divergence of view is expressed, each writer referring to the matter from his own standpoint. It will be observed that many of them allude to the important place occupied by Hardware jobbers as distributors, handling a large proportion of the goods sold and serving greatly the convenience of the retailer. But many of the letters will be of interest as giving our correspondents' views on various matters connected with the trade. There will also be found in them something that will be suggestive to both merchant and manufacturer.

Hannibal, Mo.—I have no specified record of my business, commencing 1853. Always bought as near home as possible to save transportation expenses, prices and quality being equal. To sum up the whole matter, it is this: The retailer can buy cheaper through the jobber than from the factory with the exception of a few staple goods, where a sufficient quantity can be bought to get the extra discount, as Locks, Butts, Screws and some tools. Otherwise I buy of the jobber a general assortment of Hardware for cash cheaper than from the manufacturer, considering expense it must incur on a small quantity, which is the way every prudent retailer should buy if he wants to keep an assortment and make it pay. There is no profit for a merchant to buy \$50 worth of Maydole Hammers, or the same amount of Steel Squares, if he only has sales for about \$10 worth of either in 12 months, when half-a-dozen can be bought whenever needed at, say, 10 per cent. more. He will always have the benefit of ruling market prices. The question for me is, Have Fred P. Straub & Co. confined themselves to a strictly Hardware business—that is, all kinds of Hand Tools, Building Hardware and such articles, made in part of Iron or Steel, for general use, or have they been selling Farm Machinery, Wagons, Buggies, Stoves and Tinware, all under the name of Hardware? If so, they have to buy direct from the manufacturer. On the other hand, they may have increased their business from ordinary retailer to small jobber. Then, of course, they must buy of manufacturer. There is a vast amount of goods made now in the West. Take a line north to south from Michigan to Tennessee, a country 35 years ago not thought about from the manufacturing standpoint.

Every merchant looked to the East to buy goods. Now we see manufacturing establishments almost everywhere. Hence, no doubt the Eastern manufacturer loses some of the Western trade every year, excepting in certain specialties.

Fort Dodge, Iowa.—We think that the tendency among smaller jobbers is to buy more directly from the manufacturer and not depend on larger jobbers as much as in the past. But the retail dealers, almost without an exception, buy from jobbers. This is the case in this territory, and the principal reason is that the retail dealer, as a rule, buys in small quantities and must have his goods at once. This can be accomplished if he buys from a jobber, but if he sent his small orders to a manufacturer he could not get his goods in time to do him any good.

Pueblo, Col.—We are satisfied that there is a decided increase of dealings with manufacturers, owing to solicitations for custom and greater inducements offered by manufacturers to the smaller trade.

Washington, Ind.—With regard to our special trade we think the jobbing portion remains about the same, or nearly so, as previous years. The new Railroad law gives us an advantage in getting goods from Western jobbers that we formerly sent East for, but now the difference in freights about equalizes the difference in cost, so that we don't think our factory orders have increased any appreciable amount.

Randolph, N. Y.—We buy few goods direct from the manufacturers, for this reason: On the amount of our purchases we can do fully as well, and in many cases better, with the jobber as with the manufacturer. We buy the greater portion of our goods West, as we can buy as well and make a nice saving on freights. Probably if our business were doubled we would find it to our advantage to deal with manufacturers. We would prefer to do so, and lean that way as much as possible now.

Peoria, Ill.—The small dealers have almost given up buying from manufacturers, because they have to buy more than they want of many kinds of goods in order to make a shipment, and they prefer to buy in smaller quantities and get goods oftener, even though paying for the privilege. The larger retailers are often of more importance than the jobber, and are so much impressed with that idea as to be willing to pay the manufacturer more for goods than they would have to pay the jobbers, simply to keep up the impression. Our experience is that what we have gained in the small dealers' trade has been lost on the larger trade, leaving the balance about the same.

Fort Smith, Ark.—Years ago St. Louis jobbers had complete control of this city's trade, and in the Southwestern section of this country manufacturers never solicited; neither did the manufacturers' representative call on us for trade direct. In the last four or five years the solicitations of the manufacturers with the small jobbers and large retailers in the Southwest has each year increased largely, the manufacturers offering goods at such prices that the St. Louis jobbers could not or would not meet them. Consequently the large jobbers have been placed between two millstones, and the grinding process is still in operation. The most benefit in this accrued to the small stores, jobbers and retailers. It has built up more small jobbing centers throughout our section who deal direct with the factories or their agents at a consequent loss to the large jobbers, which, for our section, were at St. Louis, Cincinnati, Chicago and, say, Memphis. The manufacturers have very likely gained also thereby, as the small jobber is not so exacting in demanding a ruinous price of the manufacturers as the large jobber. They may sell less in this way, but their profits are larger. Fort Smith, with the exception of one or two retail establishments, buys direct from manufacturers or their agents. She is gradually forcing St. Louis out of the territory surrounding Fort Smith, pursuing her to the limits where it becomes merely a matter of freight rates. Little Rock is fighting both Memphis and St. Louis. Springfield, Mo., tussles with St. Louis and smaller jobbing centers. Hot Springs, Pine Bluff, Ark., are doing the same with the larger jobbers. On the one side we have Fort Smith, and other points in our section increasing their jobbing trade yearly through the aid of the manufacturers, and on the other a yearly decrease in sales and profits to the large jobbers located in large cities.

Davenport, Iowa.—We think the jobbing business is not on the increase, as the large manufacturers are trying to do away with the middlemen by direct offers to the country trade and small manufacturer and by limiting the discounts to the jobbers to such a small percentage as not to pay business expenses. They will fail again in this effort as they did before. Jobbers, on account of the variety of their goods, can reach consumers at less expense than the manufacturers of a few articles.

The past has given to a good many manufacturers a severe lesson, which ought to be in their memory, but the prosperous position of the jobber has created jealousy and another lesson seems to be necessary.

Louisville, Ky.—We believe the jobber has an important place to fill, of which he cannot be deprived. It is a continual case of turnover—the small houses grow into jobbers and jobbers who have insufficient capital or insufficient brains are displaced. Of course, if it comes to such a pass that a jobber cannot secure sufficient margin, by reason of his supposed advantages, he will simply turn his attention to supplying a smaller class of trade than he does at present. Certainly the rule of *facile descensus* will apply here as well as elsewhere.

Jerseyville, Ill.—I am buying most all my Hardware from the jobbers, principally in St. Louis. Of course there are some goods purchased of manufacturers, but they do not exceed 15 to 20 per cent. of my purchases.

Geneseo, N. Y.—While it is for the interest of the retail dealer to buy certain lines of goods at first hands, we would say that as far as our observation goes the jobber is more than holding his own, for the reason that the variety of goods he, as representative, has makes him more than an even competitor for the manufacturer with only one class of goods to offer, and with this line in many instances in the hands of the jobber at the same price, or a very small advance, thereby making one or more less accounts. The retailer can also by buying more goods of the jobber get better prices for the whole invoice. We think it is with them somewhat as it is with us, that the more a customer buys the better they can afford to use him.

Quincy, Ill.—We think the jobbing business is on the increase in the West. The new jobbing houses in the West, together with the increased number of traveling men sent out by the old houses during the last few years, have made competition so sharp that there is little or no saving for country merchants to buy of manufacturers or their agents.

Brookings, Dak.—In our district, and so far as our observation goes, Irons are bought from manufacturers or their agents, also Tin goods and Scales; Hardware and miscellaneous goods from jobbers.

Searcy, Ark.—Merchants of this place buy most of their Hardware from jobbers, very little being bought from manufacturers.

Morrilton, Ark.—We buy more from manufacturers than formerly.

Doland, Dak.—We are buying two-thirds of our goods from jobbers.

Scotland, Dak.—The merchants West buy most of their goods from jobbers, as manufacturers' representatives do not get as far West as this, unless they want to introduce some novelty. We should say jobbers get the bulk of trade out West.

Paoli, Ind.—I buy principally of the jobbing trade, but buy of the manufacturer in some lines, and am inclining toward the manufacturer. A few years ago I bought of jobbers exclusively.

Highmore, Dak.—Our tendency is toward direct dealings with the manufacturers more and more each year. It is merely a question of price with us, as we do not overstock in order to obtain an extra discount, but can obtain it on our usual purchases from the manufacturers.

Lebanon, Ind.—We are of the opinion that the tendency is to trade direct with the manufacturers. We buy at least two-thirds of our goods direct.

Rapid City, Dak.—If the dealer has business enough, we think it pays to buy of the manufacturer; but, buying in small lots, it is much better to sort up with a jobber. The Hardware merchants of Rapid City buy mostly of jobbers.

Adrian, Mich.—If there is an increased tendency toward direct dealings between the retailer and manufacturer, presume the cause is, prices being equal, the retailer likes to have his goods come to him in fresh packages, and not have some unfamiliar make substituted to fill an order. Also, the "back order" business is a sea of trouble to the retailer.

Ottumwa, Iowa.—Our impression is that there has not been much increase in the jobbing business during the past two years. This, we think, is due generally to depression in the Hardware business and the very small margins of profit made by the jobbers, rather than to a tendency among retailers to buy direct from the manufacturers.

Quincy, Ill.—We as jobbers buy most of our goods direct. In this section small dealers are supplied by the jobbers.

Watertown, Dak.—In this part of the country we are dealing more and more direct with

the manufacturer, and find we can do much better. We buy where we can buy the cheapest, and in almost every instance where we want a good bill in any one line we can do the best from the factory.

Keokuk, Iowa.—Cannot see much change in proportion of business done by jobbers. Retailers buy a few specialties of manufacturers, but the bulk of their goods from jobbers. Think the buying of goods from jobbers is rather on the increase than otherwise, principally on account of the time required to get goods of manufacturers, retailers generally expecting their orders to be filled the same day they are received.

Vinton, Iowa.—We buy most of our goods from manufacturers, not because we can buy goods much cheaper, but for the following reasons: The manufacturers agree to furnish a special make of goods, the jobbers being frequently unable to do this, because they do not carry a full line of the goods wanted; the manufacturers do not usually charge case and cartage, and goods come in better shape.

The following letters are selected from our advices from Ohio, and will be of interest as referring to a number of places, large and small, thus giving a more complete view of the tendencies in that State than is afforded in the more cursory view of the field at large afforded in the letters printed above:

Columbus, Ohio.—The country merchants in all the territory over which our trade extends make all their purchases of Hardware from the jobbers, with perhaps the rare exception of some special article. Goods are sold so close by the jobbers that it is no object to deal with the manufacturer. The Hardware trade has largely increased within a few years past in both wholesale and retail business.

Richmond, Ohio.—In this section of the State goods are largely bought of jobbers.

Bridgeport, Ohio.—I think the tendency of the times is toward dealing with manufacturers.

Granville, Ohio.—We think jobbers' trade is growing every year, and if they only keep good goods at manufacturers' prices the retailers will purchase of them.

Gallipolis, Ohio.—I buy both from the jobber and the manufacturer. In some lines of goods I buy exclusively from manufacturer, while in other lines I buy of jobber and manufacturer, but taking it as a whole I buy the bulk of my goods from manufacturer. I think that this is the case with most houses in this section that amount to anything.

Massillon, Ohio.—We find the tendency (regarding ourselves) toward direct dealings with the manufacturers.

Kenton, Ohio.—We have very little knowledge where the Hardware trade generally throughout our State buy their goods, but judging from what we know as to the stores in this country they buy the bulk of their goods from the jobbers. Of Heavy Hardware, such as Iron, Nails, Barbed wire, Gas-Pipe, &c., the bulk is bought from the manufacturers. We find that, generally speaking, we can do as well with the jobber as with the manufacturer.

Chillicothe, Ohio.—In our trade there is very little change in our buying for the last four years.

Bryan, Ohio.—We find it profitable to deal with the manufacturer direct when we wish to use the quantities of goods that he wishes to sell, but we think that many dealers do as well with jobbers when they are purchasing in small quantities.

Hamilton, Ohio.—We think the tendency is to buy from the factory more and more every year.

Perrysburg, Ohio.—My experience is that jobbers sell fully as low to the retail trade as the manufacturers, except in some special cases, though there are always some who think they are not buying low unless they buy from headquarters. The jobbers are a great convenience to the retail trade, as the retailer can order a large line of goods from one source and save freight that he would be obliged to pay by ordering the same goods from different sources. The jobbers' trade is becoming localized, and goods will be sold in the territory naturally tributary to their location. I think I would pay more for the goods I buy if there were no jobbers, as the lively competition keeps prices down to a small margin. The business is getting to be done by large and wealthy houses. I think they are a necessary part of the business and are here for all time.

Woodville, Ohio.—The practice of most of the wholesale houses doing a very extensive retail business in selling goods to the consumer, and that, too, in the immediate vicinity where they have Hardware dealers for customers, at prices but a little over those charged to dealers,

is not relished by the trade. Further, the pernicious practice of traveling men over-anxious to sell goods, especially in small towns, when failing to sell to the regular trade, proceeding straight to some general store and very often stocking them up with goods that belong to the Hardware trade only, at very low prices, for the purpose of drawing out other trade, of course, is not looked upon with favor by the trade. I would prefer, therefore, to deal directly with the manufacturer rather than a wholesale-retail house, or those who furnish goods to general stores.

Dayton, Ohio.—We are buying as much from the jobbers as we are from the manufacturers. The price decides how we will buy. Our tendency in buying is in the direction of the manufacturers.

Howard, Ohio.—I buy all goods from jobbers.

Portsmouth, Ohio.—It seems to us that Hardware dealers are disposed to buy direct from the manufacturers, or their agents, and the only way the jobbers can prevent it is by giving away a part of the extra quantity discounts allowed them by the manufacturers.

Ironton, Ohio.—We can safely say that we are buying as many goods of jobbers as we did ten years ago, and think that we will do so as long as we are small dealers. We know by experience that there is no money saved by buying small lots of factories direct. We think, and, in fact, know, that when we give an order for \$500 worth of Hardware there are goods in this order made by 25 different factories. Should we order the goods direct from factories there would be 25 orders to send, 25 lots of freight to receive, 25 freight bills to pay, 25 drayages to pay, 25 entries to make in books, and some of the goods come in two or three weeks late. Besides, not one of the manufacturers would thank us for such a small order and the price is about the same as the jobber would gladly give us. We think that as long as we can count ourselves retailers we will buy more of our goods from jobbing-houses, as the Hardware store has probably the greatest variety of goods of any other class of stores in the country. We think that as long as there are small Hardware stores there will be jobbers also. We are of the belief that this matter will remain in the future as it has been in the past, that the great part of General Hardware will be bought of the jobber.

Washington C. H., Ohio.—We think tendency is to have direct dealings with manufacturer or his agent.

Apple Creek, Ohio.—I find that the large retailers in this section are buying more of the jobbers than manufacturers, and that the jobbing trade in our State is on the increase. We have Cleveland, Youngstown, Akron, Canton, Toledo, Mansfield and Dayton with large jobbing houses, with stocks ranging from \$75,000 to upward of \$300,000, while a few years ago Youngstown, Akron, Canton, Mansfield and other places contained only retail stores. In most instances we can buy cheaper of the jobber than the manufacturer. The jobbing trade is on the increase.

Pomeroy, Ohio.—We buy the greater part of our goods from jobbers and manufacturers' agents—Iron, Nails, Horseshoes, &c., from manufacturers.

Toledo, Ohio.—Our dealings with jobbers and manufacturers for the past year, as nearly as we can find out, have been about equally divided, and we are buying more from the manufacturers now than formerly.

Business Methods.

Kellogg, Johnson & Bliss, 108 and 110 Randolph street, Chicago, have a system of preserving copies of orders which they claim is far more satisfactory than any other plan they have tried. For this purpose they have taken a blank book of 400 pages, with the pages numbered and an alphabetical index in front. As most of their goods are bought regularly from certain houses, they assign a number of pages to each house, according to the volume of business which they have been in the habit of transacting in that line. Plenty of room is left for houses from whom purchases are made irregularly. In this book all orders are copied before they are mailed, and in it also the goods are checked off when they are received. The orders sent to each house are thus kept together. The objection to the use of an ordinary copying book is that the orders are necessarily intermingled, and besides it often happens that through carelessness or haste on the part of the person copying the letter an undecipherable page

is left, which may perhaps relate to the most important part of an order. An occasional error, it is true, may be made in transcribing orders in the method followed by Kellogg, Johnson & Bliss, but in a long series of years they have had very little trouble from this cause, whereas they formerly suffered much inconvenience when using the ordinary copying book. The same firm also use an invoice book for their stock. This is a book of 500 pages. In it all stock is entered in alphabetical order, the names of articles having under them descriptions of every variety carried and their price. This stock book is found of daily value to salesmen, and it is also of very great use in taking account of stock. Kellogg, Johnson & Bliss have one of the largest and best equipped retail stores in the country, and, while they handle a general line of Hardware, they give special attention to Builders' Hardware and Mechanics' Tools.

Arrangement of Stores.

A dealer in Montgomery City, Mo., favors us with a description of a wire-cloth rack, which, in his opinion, is the best for the purpose which has ever come under his notice. He says:

I believe I have a better wire-cloth rack than any I have ever seen, and at very small expense. A fair idea of the device may be gained from the sketch. Each end of the rack is made of a 2 x 6 inch dressed pine board, and the two are joined together at the bottom with a

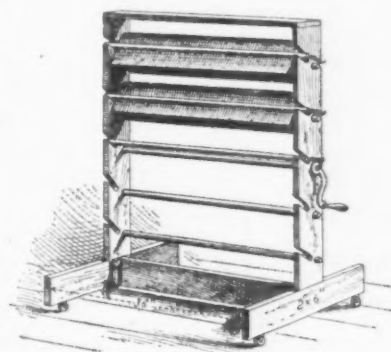


Fig. 301.—Wire-Cloth Rack.

2 x 6 inch piece, making the frame 36 inches wide and providing room for five sizes of cloth. These are slipped on Judd's pine curtain rollers and inserted through holes in each end of the frame, as indicated in the engraving presented herewith. One end of this roller is squared to fit an ordinary grindstone crank. The other end has a gain cut all around it, something after the style of a key seat, except it is crosswise the roller. A piece of No. 8 wire is slipped through the uprights and the edge of the hole into the gain, to keep this rod from working out while unwinding the cloth. In the upright post is cut a series of slots, in which I place rollers of the same description as those above referred to. Into each end of these rollers is screwed a round head blued screw, while a square screw hook is placed in the post just behind the roller holding the wire. To this blued screw I attach a coil brass spring, the opposite end of which I place over the square screw hook above mentioned. The roller and springs give sufficient tension to hold the wire taut while the cloth is being unwound. A rack of this description can be made for \$1.25 which will hold six rolls of wire cloth. I have many other conveniences in use in my store which I may find time to write about later.

Short vs. Long Discount.

While the cash discounts mentioned in the following article from the *American Storekeeper* are larger than those usually given in Hardware, the principle embraced is still applicable, and the matter deserves the careful attention of Hardwaremen:

We will suppose you have purchased a bill of \$1000 and have received the invoice, on which the terms are given as "6 off 10 days; 5 off 30 days; 4 off 60 days." We will first remember that discount is an allowance made for the payment of money before it is due, and is equivalent to the interest of the amount of the invoice, \$1000 in this case, during the 60 days. To apply our mathematics to the case in point, if we pay this bill within 10 days we will deduct \$60 from the invoice and remit \$940. What we have saved equals the interest on \$1000 for one year at 6 per cent. The advantage of doing this is very apparent. If we say we will wait 20 days and take off 5 per cent., we had better think a moment and then not do it. If we should do so, we would pay \$10 for the use of \$1000 for 20 days; this is at the rate of $1\frac{1}{2}$ per cent. per month, or 18 per cent. per annum. You will at once recognize that no merchant should pay such an exorbitant rate of interest, except in time of great emergency. Let us figure a little further and take it for granted that we do not propose to pay the bill until 60 days have expired, and that we then propose to pay \$960. If we do this, we pay \$20 for the use of the money for 50 days. A little calculation will show you that this is equivalent to paying about $1\frac{2}{3}$ per cent. interest per month, or $14\frac{2}{3}$ per cent. per annum. If, now, you do not propose to pay at the end of 60 days, and prefer to pay at 3 months, and pay the \$1000 net, you will be paying \$60 for the use of \$1000 for 80 days, which is at the rate of $2\frac{1}{2}$ per cent. a month, or about 27 per cent. per annum. If the figures in the previous cases were astonishing, these are astounding, and we do not believe that any merchant can say, after reading this carefully, that he can afford not to discount his bills.

A Million Dollars and a Thousand Years.

BY KNARF.

These terms, "a million dollars and a thousand years," are only comparative terms, to designate untold wealth and unlimited life. If I had these at my disposal, they should both be devoted to rectifying some of the most glaring evils of our modern business life—if I felt as I do now. My feelings on the first evil I would tackle may be somewhat wrought up, but I do not think unduly so. It goes by the name of "credit," or words which translate into that, the world over. It is not a large word, and the first letter is near the initial one of the alphabet; but it is a word that brings disaster to the world.

The origin of credit is not certainly known, but is supposed to have come into use when Cain went to dwell in the land of Nod; wanting to trade with his brother-in-law one day, and finding he had put on his other pants before leaving home and left his pocketbook in them, asked his kinsman "to put it on the slate." The same person has left other legacies to the world, which have become equally unpopular. Credit may be one of the evils that must be endured, especially in the nineteenth century. But, from the sewing woman who gets a pound of butter from the corner grocery on tick, until she gets her money on the present unfinished job, to the speculator who buys an elevator full of wheat on futures, the system is the same.

Do the profits to the wholesale Hardware jobber justify the risks he takes in lending his goods around the country—of having

them lent by his traveling representatives?

If he were the only house that sold Mr. Gimlet a bill during the month, the risk would be small. But Mr. Gimlet has the pleasure of entertaining on an average three traveling men each day, who are dependent upon their position the following year in proportion to the amount of their sales this year; consequently they are more than desirous of taking his order for present shipment, and of duplicating the amount of goods in 60 days to fill up his broken assortment. In fact, each of these 18 drummers each week makes all known inducements to book Mr. Gimlet's orders, and our friend Mr. Gimlet, being a shrewd buyer, leaves the house little margin in profits after the \$8 or \$10 a day for salary, traveling expenses and the additional expenses of the house are deducted. The jobber writes a sharp letter, inquiring why the screws and strap-hinge price had been cut so on Mr. Gimlet's bill, with the usual statement that at regular prices the house is making no money. The answer comes back that prices on the road and prices in the office are two different things, and if the salesman sells goods he must meet competition, and then the matter drops. The salesman's answer answers itself. Mr. Gimlet has been buying somewhat more largely of everything than usual, for the crop outlook is good, and, though it is Presidential year, the prospects for a spring trade are good. But the wheat gets frozen out in his section of country by winter rains which melt their snow covering; oats turn out poorly, followed by a large crop of potato bugs, and dry weather, which uses up the berry crop. Legislation in Congress affects the price of raw material; iron drops, and his two carloads of nails have to be sold at an actual loss.

These depressing influences coupled with campaign uncertainties deter the moneyed men from investing in new buildings, the manufacturers from enlarging or improving their plants—in short, the wheels of commerce miss the lubricating causes that insure quiet, easy running, and by the time Mr. Gimlet's bill begins to mature he finds it necessary to ask an extension, giving his paper for the same. His credit has always been good; he has done a safe conservative business; his creditors do not want to close him up, as he may yet be a good customer; Dun and Bradstreet have always quoted him "fair," and a special report from the agency assures them that his embarrassment is only temporary. Matters in Mr. Gimlet's establishment do not improve with time, and as he considers that his family has claims upon him greater than jobbers, who have taken the risks, and made money from him for years, he arranges his worldly affairs so a confidential friend becomes owner of his stock just previous to his notes maturing.

If Mr. Gimlet could have disposed of what goods he did sell for cash, the fraudulent assignment would have been avoided. When he saw the way things were going he sold more freely on credit than he had before, hoping to realize from his book accounts in time to meet his paper. Failure on the part of his customers to fulfill their promises in time to avoid disaster took away his only and last hope. The history of the two or three hundred reported failures a week would read much the same as this, with the word credit, with a big C, at both ends of the novel.

The newly married couple want to buy a stove and the necessary trimming to conduct the culinary department of their newly found paradise. They have so many other things to buy, they can't pay all cash for the outfit, but would like to pay \$5 a month. Mr. Gausedoor sometimes sells stoves on the installment plan, and as he has a form of lease that covers

everything but the souls of his patrons he does not hesitate to let the strangers have what they want on time, making it necessary for seven months to elapse before the bill is paid. Mr. Gausedoor has had to pay for his trimming in 60 days or less, and for his stove in four months. He has made \$4.85 on the deal, and waits six months for his profit, unless he counts his profit before he receives all the cost of his goods. Either the husband or wife make the payments promptly each month, for four or five months, and then they fail to put in an appearance. A visit to their home reveals the fact that the wife is poorly, not being used to hard work, and the husband has been laid off, or is sick, or some good reason why they are not able to meet their payment.

If Mr. Gausedoor's bill was the only one, and all their household plunder but the stove and trimmings were paid for, it would not have been so hopeless; but upon investigation Mr. Gausedoor finds they have signed leases for their furniture and sewing machine. The wife had always been used to a musical instrument in the house, so they thought by a little more economy they could pay \$5 a month on an organ. Their house rent was \$5 a month. They had agreed to pay this \$25 a month on \$1.50 a day that the husband earned, leaving them \$14 a month for their living expenses. Mr. Gausedoor sees the case is almost hopeless, and pulls his stove and trimmings. The other dealers follow suit, and the married couple lose the \$100 or \$125 they have paid. Here is another failure, which is never reported in commercial circles, but causes more suffering and loss of faith in God and man than Mr. Gimlet's did. If this young couple knew they could not get goods on credit the wedding would have probably been deferred until they had enough capital earned to start them on a cash basis. This is not simply a supposed case, but repeats itself over and over in reality each year. Both the merchant and purchaser are injured by credit.

The statement has been made that there is not enough money in the world to pay all the debts at once. This may be the case, but \$1 kept moving will pay the entire indebtedness of the world. But it has got to get a move on it, and keep it up. What a feeling of independent manhood must be the possession of the retail merchant who lives up to the conspicuous notice hung in his store, "Terms Cash!" He can refuse one credit without fear of offending, because he refuses all credit.

What a disagreeable feeling when you see old Judge Pennymen coming into your store. He is soaked with whisky, and you are perfectly sure your shoe bill will encroach upon the principle invested in the goods you sell him, to say nothing of the profits. But you hate to refuse the old resident a little credit, so you sell him a pocket knife for just a few days, and after he has left the store you intentionally forget to charge it, as ever getting the pay is so doubtful.

We are apt to copy as well as admire methods which bring success. The largest as well as the most successful corporations are conducted on the cash system. We admire the stability of Government buildings, and anything in the construction line put up by Uncle Sam we are sure will be well put up. But the money is always ready to pay for it. If the credit system were desirable why should not the railroads sell tickets on time, waiting for the traveler to reach his journey's end and receive the money, the getting of which was the object of his journey, and then pay for the ride? Why do not the telegraph companies send messages and wait for pay until some other time? Why, if these corporations can't get along and do business successfully on anything but a cash basis, can we expect to? The

proportion of those who are successful in business is put down as one-tenth of those who start a business for themselves. There may be reasons why they are not successful, such as temperament, habits, location, ability, &c., &c., but credit is at the bottom of it all.

The affect of the ability of one to have "good credit" is bad. A fact needing no proving is that persons will always buy more freely when having things charged than when paying as they go. Also when the bills come to be paid almost always they are larger than they expected. Would it not be a good plan to look at this method of credit from a higher standpoint? Not that it is a favor you are conferring upon the merchant in taking his goods in exchange for a spoken or implied contract to pay some time, and look at it as if you were asking the loan of money from the merchant. Let the merchant sell his goods and get the money for them, and let the banks sell the credits. And, Mr. Merchant, how many of your customers would you loan money to, even to the cost of the goods they buy and take away home. In a general store in the lumber regions of Michigan we have an example of my theory. When customers want goods on time or credit they are referred to the merchant; he finds how much they want and for how long a time. He then makes out a note for the amount, with interest from date, and, after their signing it, he gives them the money and they pay cash for what they buy.

The money is given them and they pay it to the salesman in exchange for the goods. The credit system is often the result of competition and the desire to make sales, either from actual need of money to pay bills coming due or to gain custom. Time is an almost irresistible inducement to purchasers, and, in buying, they so far overdo the matter that they soon become reckless as to results. A practical solution of the credit system would be a national exemption law, exempting everything a person owns or could own, so no debt could be collected by law. Confidence in men's honesty, not backed by law, would be so much less that credit would be a thing of the past. Without vouching for the truth of the following statement, it has been said that in Japan—I think—any one who owes any one on their New Year's Day is prohibited by the Government from continuing in business until such debts are paid. His business place is closed.

Exports.

PER SHIP MINISTER OF MARINE, OCTOBER 25, FOR MELBOURNE, AUSTRALIA, CONTINUED.

By R. W. Forbes & Son.—40 dozen Shovels, 125 dozen Washboards, 4 dozen Egg Beaters, 15 crates Churns, 5 packages Hardware, 1 package Hardware, 11 packages Hardware, 108 dozen Axe Handles, 43 dozen Shovels, 18 dozen Axes, 24 dozen Axes, 2 dozen Bench Screws, 8 dozen Curry Combs, 2 packages Carriage Hardware, 20 dozen Shovel Forks, 4 packages Agricultural Implements, 6 Parers, 16 cases Hardware, 7 Bird Cages, 8 boxes Stoves, 1 dozen Cork Pullers, 1 dozen Carpet Sweepers, 1 case Toys, 1/2 dozen Razor Stropps, 2 packages Fruit Evaporators, 28 packages Hardware, 14 dozen Axes, 15 1/2 dozen Hatchets, 2 dozen Bench Screws, 1 dozen Money Drawers, 1 case Hardware, 1140 boxes Clothes Pins, 1 package Farming Machine, 28 packages Hardware, 6 dozen Wringers, 1 case Bench Screws, 80 dozen Shovels, 362 dozen Handles, 6 dozen Horse Brushes, 9 crates Churns, 22,435 pounds Barb Wire, 2 packages Hardware, 3 cases Scales.

By Arnold, Cheney & Co.—360 dozen Handles, 960 dozen Handles, 1080 dozen Handles, 3 cases Hardware, 1 case Axes, 8 cases Saws, 800 dozen Handles, 700 dozen Handles, 4 cases Axes, 54,814 pieces Roofing Slate, 4 cases Hardware, 1 case Hardware.

By New Haven Clock Company.—1740 Clocks.

By H. S. Chipman.—12 cases Step-Ladders.

By J. H. Starin.—3395 pounds Iron Rakes.

By A. Field & Co.—50 sets Axes.

By Russell & Erwin Mfg. Company.—42 cases Hardware, 51 cases Hardware.

By Plumb, Burdick & Barnard.—3330 pounds Iron Bolts, 5665 pounds Iron Bolts, 8468 pounds Iron Bolts.

By Healy & Earl.—1 box Hardware, 1 case Saws.

By Welsh & Lea.—7 cases Iron Bolts, 30 packages Hardware.

By Ansonia Clock Company.—112 boxes Clocks.

By W. K. Freeman.—300 dozen Axe Handles, 23 packages Lamp Goods, 3 boxes Hardware, 1 package Drills, 12 packages Hardware.

By Woodhouse & Stertz.—3244 pounds Axes, 9 cases Hardware.

By W. Peabody & Co.—22 cases Woodworking Machinery.

By Arkell & Douglas.—104 dozen Hatchets, 50 dozen Axes, 20 dozen Forks, 41 dozen Axes, 70 dozen Axes, 400 pounds Nails, 105 dozen Saws, 18 dozen Hatchets, 2 bundles Hardware, 229 pounds Lampware, 36 sets Axes, 4 cases Hardware, 1 case Carriage-Ware, 2 dozen Saw Clamps, 12 dozen Pulleys, 199 pounds Castings, 6 dozen Mattocks, 6 dozen Picks, 2 cases Wrenches, 1 1/2 dozen Wringers, 16 dozen Shovels, 16 dozen Axes, 500 Broom Handles, 3 dozen Mattocks, 1/2 gross Axe Grease, 1/2 dozen Machinery, 259 pounds Hardware, 18 dozen Glue, 7 1/2 dozen Chisels, 7 packages Stone, 160 1/2 dozen Chisels.

By J. Dixon Crucible Company.—671 pounds Lead Pencils.

By McLean Bros. & Rigg.—12 dozen Saws, 14 dozen Braces, 1900 pounds Nails, 15 dozen Bench Screws and Wrenches, 10 dozen Clamps, 10,000 Bolts, 351 pounds Oil Stoves, 13 dozen Axes and Hatchets, 8 dozen Axes, 1 dozen Plated-Ware, 13 Coffee Mills, 39 Meat Choppers, 36 dozen Hammers, 1 dozen Store Trucks, 6 gross Mouse Traps, 18 sets Wheels, 2 dozen Miter Boxes, 51 Chucks, 46 dozen Saws, 3 Chucks, 43 dozen Locks, 49 dozen Mouse Traps, 1 case Wrenches and Bell Studs, 3 gross Tin Oilers, 21 dozen Washboards, 12 dozen Lamp Burners, 204 dozen Chimneys, 6 packages Plated-Ware, 3 gross Fly Traps, 40 dozen Illuminators, 1 dozen Firearms, 50 sets Axes, 7 dozen Wringers, 9 cases Drills, &c., 24 dozen Washboards, 48 dozen Axes, 20 Harrows, 28 dozen Drills, 30 dozen Axe Grease, 12 1/2 gross Axe Grease, 45 Weeders, 60 dozen Axes.

PER BARK V. L. STAFFORD, NOVEMBER 1, FOR PORT NATAL, AFRICA.

By Arkell & Douglas.—6 cases Agricultural Implements, 2 dozen Meat Cutters, 1 dozen Axes, 3 dozen Washboards, 2 dozen Picks, 30 dozen Picks, 3 Ranges, 10 cases Plow Parts, 62 dozen Brooms, 208 Agricultural Implements, 60 dozen Axes, 5 cases Bolts, 6 Carriages, 10 cases Plow Parts, 208 Agricultural Implements, 3 dozen Wire Goods, 4 dozen Hatchets, 20 dozen Axes, 6 dozen Axes, 40 Plows, 30 dozen Handles, 3 dozen Wheelbarrows, 1/2 dozen Agricultural Implements, 2 dozen Saws, 22 dozen Plated-Ware, 4 dozen Hardware, 12 pairs Sash Pulleys, 1-6 dozen Presses, 80 dozen Hatchets, 2 dozen Sewing Machines, 88 dozen Picks, 1/2 dozen Store Trucks, 150 Plow Beams, 150 pairs Handles, 150 Plow Parts, 5 dozen Axes, 6 dozen Picks, 12 crates Stoves, 1 Carriage, 3 sets Axes, 182 dozen Handles, 39 cases Sash Weights, 4 dozen Braces, 14 1/2 dozen Saws, 6 dozen Hammers, 2 dozen Mandrels, 6 dozen Locks, 54 dozen Axes and Picks, 129 pounds Sash Cord, 1 dozen Agricultural Implements, 152 Plows, 3 dozen Fruit Jars, 180 feet Sash Cord, 75 pounds Horse Nails, 84 dozen Shovels, 9 cases Hardware, 19 1/2 dozen Lampware, 6 dozen Axes, 1 case Hardware, 8 cases Meat Cutters, 5 dozen Wrenches, 2 dozen Handles, 1 case Hardware, 8 dozen Drills, 1-6 dozen Trucks, 9 pairs Hinges, 9 dozen Locks, 1 case Castings, 4 cases Hardware.

By Marcial & Co.—10 dozen Axes, 10 dozen Hatchets, 6 dozen Hatchets.

By H. W. Peabody & Co.—1 case Hardware.

By H. A. Caesar & Co.—25 dozen Axes, 48 pieces Plows, 125 dozen Plow Points, 125 dozen Plow Parts, 32 dozen Plows, 150 dozen Plow Parts, 1/2 dozen Axes and Hatchets, 40 pieces Plows, 72 dozen Plow Frames, 904 pieces Plow Parts, 24 pieces Plows.

PER BARK H. S. JACKSON, NOVEMBER 1, FOR EAST LONDON.

By W. H. Crossman & Bro.—2500 pounds Sash Weights, 102 1/2 pounds Sash Cord, 90 dozen Hatchets, 9 Scales, 32 dozen Chains, 10 Stoves, 125 dozen Brooms, 100 dozen Handles, 395 cases Plow Parts, 20 Corn Shellers, 12 Mills, 45 Churns, 6 dozen Clocks, 2000 pounds Nails, 18 packages Carriage-Ware, 4 cases Carriage Hardware, 1820 pounds Sash Weights, 78 pounds Sash Cord, 24 dozen Handles, 20 dozen Hatchets, 40 dozen Brooms, 42 dozen Washboards, 18 Stoves, 221 cases Plow Parts, 2300 pounds Nails, 3 dozen Clocks, 36 Grindstones, 3 packages Carriage-Ware, 14 packages Hardware.

TO MOSSEL BAY.

48 cases Plow Parts, 15 dozen Brooms, 61 1/4 gross Axe Grease, 11 dozen Axes, 8 dozen Hatchets, 1 gross Blacking, 840 pounds Sash Weights, 32 pounds Sash Cord, 42 dozen Handles, 900 pounds Sash Weights, 47 1/2 pounds Sash Cord, 1 box Hardware, 1/2 dozen Corn Shellers, 6 dozen Fly Traps, 119 cases Plow Parts, 24 barrels Carriage-Ware, 1050 pounds Sash Weights, 46 pounds Sash Cord, 1 barrel Hardware, 9 dozen Hatchets, 13 dozen Axes, 24 dozen Handles, 1 dozen Fly Pans, 6 dozen Fly Traps, 20 dozen Brooms, 300 dozen Axe Grease, 110 cases Plow Parts, 1200 pounds Nails, 6 cases Carriage Hardware, 10 packages Carriage-Ware.

PER BARK SIMEON, OCTOBER 31, 1888, FOR AUCKLAND, NEW ZEALAND.

By R. W. Forbes & Son.—3 gross Shade Rollers, 8 cases Oil Stoves, 9 racks Churns, 9 cases Wringers, 100 dozen Axe Handles, 455 pounds Bolts, 3 boxes Lampware, 4 dozen Wringers, 1 case Lawn Pumps, 1 package Hardware, 10 dozen Shovels, 105 dozen Axes, 7 dozen Forks, 30 dozen Shovels, 8 boxes Scales, 20 dozen Hatchets, 16 dozen Hammers, 4800 Carriage Bolts, 30 dozen Washboards, 60 dozen Axe Handles, 2 packages Carriage Hardware, 11 crates Stoves, 1267 feet Belting, 1 barrel Hardware, 2 boxes Rat Traps.

By W. H. Crossman & Bro.—1 case Toys, 10 cases Scales, 100 gross Pistol Caps, 4 packages Lamp Goods, 60 dozen Handles, 12 dozen Axes, 180 dozen Handles, 75 dozen Brooms, 1 dozen Hay Knives, 1/2 dozen Bolt Cutters, 1 dozen Stove Trucks, 3 1/2 dozen Wringers, 1000 pounds Horse Nails, 1 dozen Ox Bows, 12 dozen Mouse Traps, 2000 pounds Nails, 3 dozen Razor Stropps and Hardware, 11 cases Hardware, 5 cases Tools, 1 case Hardware, 382 Wood Spoons.

By H. W. Peabody & Co.—308 dozen Handles, 30 dozen Shovels, 1450 pounds Nails, 4 packages Clocks, 3 packages Lawn Mowers, 3 crates Sewing Machines, 300 pounds Nails, 7 packages Fire Arms, 2 packages Tools, 6 cases Blacking.

By Mailler & Duereau.—372 dozen Handles, 60 dozen Handles, 72 dozen Handles, 180 dozen Handles, 50 dozen Washboards.

By Welch & Lea.—2 cases Iron Bolts.

By Healy & Earl.—4 crates Forges.

By Goulds Mfg. Company.—3418 pounds Pumps.

FOR WELLINGTON.

By Mailler & Duereau.—5 boxes Castings.

By R. W. Forbes & Son.—5 packages Hardware, 4 packages Kitchen Utensils, 3 dozen Wringers, 2 cases Stoves, 10 Axes, 2 packages Plated-Ware, 252 dozen Handles, 10 racks Churns, 60 dozen Brooms, 40 dozen Shovels, 25 dozen Axes, 25 packages Hardware, 2 packages Kitchen Ware, 24 cases Handles, 8 crates Churns, 1 case Agricultural Implements, 2 1/2 dozen Wringers, 16 dozen Hatchets, 33 packages Hardware, 60 dozen Shovels, 30 dozen Sash Cord, 6 cases Scales, 2 gross Axe Grease, 2 1/2 dozen Wringers, 2 cases Carriage Hardware, 2 packages Store Trucks, 19 cases Choppers, 1 1/2 dozen Emery-Wheels, 390 dozen Axe Handles, 1 package Hardware, 3 packages Hardware, 2 crates Stoves, 2 dozen Wringers, 12 dozen Handles, 6 dozen Mattocks, 1 crate Agricultural Implements, 40 boxes Horse Nails, 10 dozen Hammers, 10 dozen Shovels, 2 sets Harness, 1 dozen Whip Sockets, 9 sets Axes, 9 packages Hardware, 20 dozen Shovels, 78 cases Horse Nails, 50 dozen Shovels.

By W. H. Crossman & Bro.—1120 pounds Axe Grease, 10 dozen Shovel Forks, 130 pounds Sash Cord, 36 dozen Shovels, 1 case Stove Fittings, 9 Store Trucks, 13 1/2 dozen Wrenches, 1-6 dozen Stoves, 6 gross Pencils, 3 cases Plow Parts, 6 dozen Hatchets, 6 1/2 dozen Churns, 1/2 dozen Scales, 1 case Hardware, 2 dozen Pruning Shears, 2 cases Lamp Goods, 12 cases Tools.

By McLean Bros. & Rigg.—2 dozen Shears, 6 dozen Hammers, 1 dozen Handles, 1-6 dozen Scales, 1/2 gross Egg Beaters, 18 Clocks, 1 case Plated-Ware, 1 1/2 dozen Augers, 8 1/2 dozen Chimneys, 1 dozen Stoves, 2200 Bolts, 11 Churns, 4 cases Fruit Jars, 1 Stove, 8 dozen Wrenches, &c., 6 dozen Cranks and Rollers, 250 Handles.

By H. W. Peabody & Co.—23 cases Handles, 16 packages Hardware, 2 dozen Wringers, 4100 pounds Nails, 52 dozen Shovels, 13 packages Hardware, 500 feet Cordage, 51 packages Carriage-Ware, 98 packages Hardware, 3000 pounds Nails, 20 packages Stoves, 1 case Agricultural Implements, 40 dozen Shovels, 6 crates Churns, 172 dozen Handles, 4 packages Pumps, 1 case Razors, 5 dozen Wringers, 26 cases Hardware, 12 packages Carriage-Ware, 1 case Wringers, 1 crate Stoves, 48 dozen Handles, 210 pounds Nails, 865 pounds Bolts, 2 cases Machinery, 54 dozen Handles, 3 barrels Hardware, 1 case Twine, 103 packages Hardware, 5 packages Pumps, 6 cases Hardware.

The Boss Two-Speed Boring Machine.

This machine, which is represented in Figs. 1 and 2, is put on the market by J. H. Osborne & Co., Union City, Ind. Its special feature is indicated in its name, and consists in the fact that it can be run



Fig. 1.—The Boss Two-Speed Boring Machine.

at two different speeds, a comparatively slow speed for large augers and a speed two and a half times as great for small augers. The manner in which this is accomplished is indicated in Fig. 1, which shows clearly the mechanism of the ma-

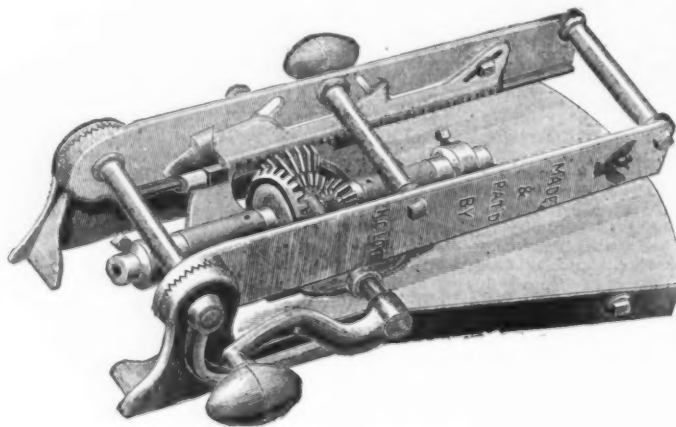


Fig. 2.—The Boss Two-Speed Boring Machine, Folded.

chine. Two augers may, if desired, be kept in the machine, to use either of which it is only necessary to point it downward by first raising the gear frame out of the main frame, inverting and replacing it, keeping the cog gearing on the right-hand side of the machine. It will be observed that the machine will bore at any angle, and that it may be folded up com-

pactly, as shown in Fig. 2. The advantage that results from having a different speed suited to the size of the auger bit used will be appreciated, and it is placed on the market by the manufacturers in confidence that it will be found to meet the wants of the trade. The quality of the workmanship is also alluded to, and various improvements which have been incorporated in the machine. The point is also made that there are no springs or shifting gear to get out of order.

The Standard Calf Weaner.

The accompanying illustrations are descriptive of a new calf weaner which has been brought out by the Standard Wire

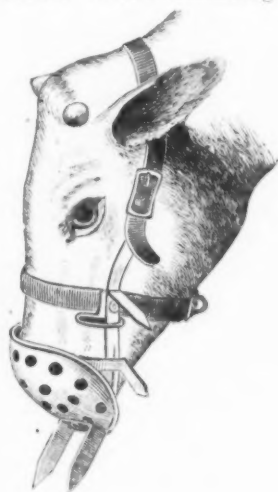


The Standard Calf Weaner.

and Iron Works, of Chicago. It consists of a perforated metallic concave plate which fits over the calf's nose and mouth, and is kept in place by suitable straps and a hinged metal frame. In front of the plate and on the sides of the frame are metallic points intended to slightly prick the cow, but which are too blunt to hurt her. The frame to which the plate is attached is hinged at a suitable distance up the calf's jaw to get out of its way when it lowers its head to feed, and to drop back over its mouth when it raises its head to suck. The plate does not closely cover the calf's mouth and nose and interfere with its breathing, but is at least 2 inches from them. The construction of this weaner obviates the fault found with open muzzles, which are apt to catch in brush or limbs of trees, and be broken by the calf in endeavoring to free itself. Bennett

Improved Soldering Furnace.

M. L. Hull, of Cleveland, Ohio, is offering the trade an improved soldering furnace which has been devised to meet the special requirements of tinner, roofers, metal pattern-makers and others who are called upon to perform work in which soldering is required. The furnace uses gasoline as a fuel. By means of the illustration the reader will be able to gather a very clear idea of the general appearance and construction of the device referred to. The arch, under which the soldering irons



Improved Soldering Furnace.

are placed, is made of fire-clay, similar to that employed for fire-pot linings in heating stoves. In order to strengthen this arch as well as to prolong its life, it is covered with Russia iron. The burner employed is of simple construction, being entirely closed in from drafts, rendering it specially desirable for outdoor work. The wooden hand-wheel, shown at the right in the engraving, is so arranged, the manufacturer claims, that it never becomes sufficiently hot to burn the hand. The cut-off or switch cup is rapid in operation, and is said to be entirely satisfactory in every particular. The pneumatic rubber pump handle, which has been recently patented, is shown at the base of the furnace, and it only requires a slight pressure of the hand to supply the necessary air to the gasoline tank. The form of handle shown has been found to be much more convenient and durable than the rubber bulb formerly employed. The tank is strongly made in one piece, stamped from metal. The manufacturer states that soon after the fire is started, the arch above referred to becomes red hot on the inside, after which time a very small fire will be sufficient to keep the irons in condition for use. The entire furnace weighs only 12 pounds, and exclusive of the iron arch, only 10 pounds.

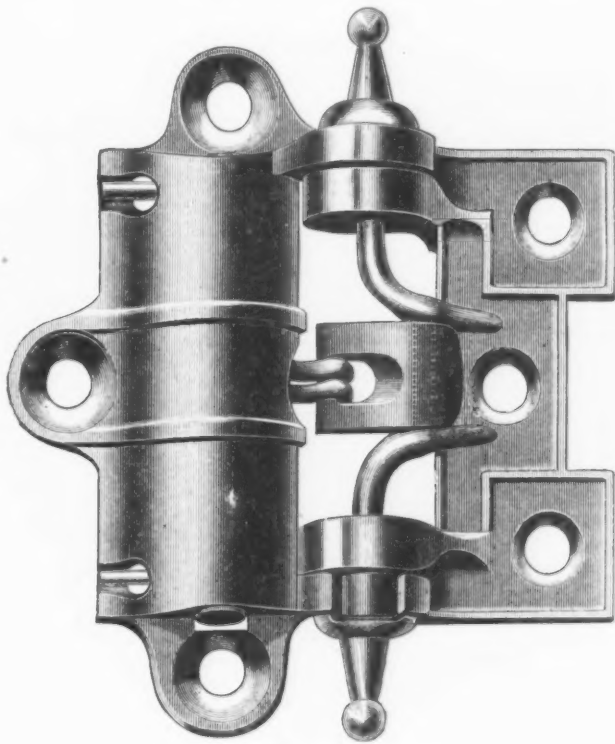
& Shirk, 154 Lake street, Chicago, are sole selling agents.

The Vulcan Iron Works, 86 North Clinton street, Chicago, have recently added a brass foundry to their establishment, and are now prepared to make aluminium bronze castings, for which there is a large field.

New Idea Spring Hinge.

The accompanying illustration represents full size the New Idea Spring Hinge, which is put on the market by the Stover Mfg. Company, Freeport, Ill. It indicates satisfactorily the construction and special features of the hinge, in which, it will be observed, are some new features. The

can be used with any size of coupling; that it is inexpensive and does it work without excess of friction, thus saving wear. We are also advised that it is made of lighter wire than is used in their other makes, thus securing more flexibility while it is still sufficiently strong and durable. It is stated by the manufacturers, in their announcement on page 43,



The New Idea Spring Hinge.

manufacturers lay special stress upon the fact that the hinge holds the door strongest at the closing point; that the spring is covered, protecting it from the weather; that there is an exceptionally light amount of strain upon the spring while in actual use. Enlarging upon one of these features, the company explain that the spring has three to four times more resistance at the closing point than others on the market, and that the resistance gradually decreases in opening the door. The hinge is also referred to as subject to less than one-half the actual working strain of any other. The illustration given represents the No. 1 hinge, a No. 2 being also made larger and stronger, 4 x 4 inches, which is intended for use on large doors.

Hub Thill Spring.

Butts & Ordway, 147 Pearl street, Boston, Mass., are putting on the market a new thill spring called the Hub, which is



Hub Thill Spring.

illustrated in the accompanying cut, which shows its form and the respects in which it differs from other similar goods on the market. The points are specially made in regard to it that there is no projecting edge to tear the sponge or wash cloth; that it

that they will send a sample pair on application to any hardware, carriage or saddlery house desiring it.

The Champion Blotter Bath.

This article, which is manufactured by the F. F. Adams Company, Erie, Pa., is represented in the accompanying illustration.



Fig. 1.—The Champion Blotter Bath.

tion, Fig. 1. It consists of a japanned metal case, neatly trimmed, measuring about 12 inches in length by 10 inches in width and 3½ inches in depth outside. The case incloses three porous tile slabs, which are represented in Fig. 2. These slabs are grooved out in such a manner as to permit them to absorb the water either slowly or rapidly, at the will of the operator; when little copying is required the water being kept low so as to come only in contact with the points of support in the tile, or kept high so as to come in contact with the thick part of the body of the tile when a great deal of copying is to be done. The pads are placed on top of the tiles by which they are evenly moistened with

the requisite amount of moisture. The pads are made especially for this purpose, and are referred to as possessing peculiar absorbing qualities adapting them to this use, while they are also especially durable. They are designated as the Champion copying pads. Simple directions for their use are given, and it is pointed out that the porous tile slabs will at once absorb moisture, and in turn gradually transmit it to the pads, which will retain for an indefinite time the evenly distributed moist surfaces desired for copying. The points are also made that the bath will not become foul, and that it combines the feature of being always ready with the sterling qualities of simplicity, neatness and

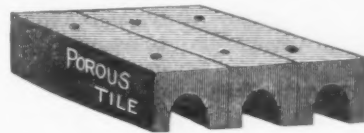


Fig. 2.—Porous Tile for Blotter Bath.

general convenience, and the claim is made that it will yield the most satisfactory results. The bath is made in two sizes, the smaller of which is illustrated above, the larger sizes containing five tile slabs instead of three. The circular of the company gives a number of testimonials from houses who have used the bath, a number of well-known hardware concerns being among them.

Standard Fibre Ware.

The Standard Fibre Ware Company now have their factory in active operation at Mankato, Minn., turning out seamless water-proof pails, slop-jars, wash-basins, keelers, &c., which are made of flax fiber. They have purchased the sole right to operate under ten patents, necessary to this branch of manufacture, in the States of Michigan, Illinois and Wisconsin and all States and Territories west of the Mississippi River. As flax fiber is expensive, they have located their factory in the great flax-producing section of the country, in which the stock can, of course, be had more cheaply than elsewhere. The machinery is mostly novel, being especially adapted to the manufacture of paper ware. The patent on pressed-ware dies covers the process of pressing out the water from the board through the pores of the wooden dies. Other machinery consists of pail presses, pail calenders, machines for trimming off the ends of pails, for bending and forcing in bottoms, for rolling hoops into shape to go over the top edges, also to go over the bottom edge or chime, &c. While a superior paper pail can be made with these machines, flax fiber tow makes a peculiarly tenacious stock, capable of being finished into goods of remarkable lightness and durability.

The tow is, of course, first beaten to a pulp, which is done by ordinary beating machines. If intended for pail bottoms or pressed ware, it is run out on a board machine, and for pails it is run out on a pail machine or winder. Each article of pressed ware, when wet, is subjected to a pressure of 80 tons, and when nearly dry to a pressure of 120 tons. Water-proofing is a very important process. A solution is used of such a character that the ware can thereafter be baked gradually until a heat of about 250° F. is reached, during which the substance of the water-proofing and stock is oxidized, and the article is made waterproof. But to make it proof against hot water it is further treated with another preparation and baked to 225°. The great superiority of flax fiber over other stock in making such ware is claimed to be its strength of fiber to bear the corrugating,

curling, pressing and water-proofing processes. The ovens are heated by steam in such a manner as to secure perfect uniformity of temperature.

In all their operations the company have sought to produce a good article and not a cheap one, believing that their policy would prove to be the best in the long run. They direct special attention to their patent process of affixing the bottom iron hoops to their pails. The hoop is so attached as to protect the edge, at the same time reaching to and supporting the bottom of the vessel. Besides this support the bottom is fitted into a corrugation made on the side of the pail, thus doubly securing it. Each vessel is highly finished with a superior coating of enamel, and the best grade is hand-painted and decorated, afterward being baked to secure a lasting finish, remove all taste or odor, destroy all injurious mineral properties, and to fit it to hold unaffected any liquid that may be put in it.

The Emery Knife Sharpeners and Oil Stones.

The Tanite Company, Stroudsburg, Pa., are putting on the market the Solid Emery Oil Stone herewith represented, Fig. 1, and the Knife Sharpener shown in

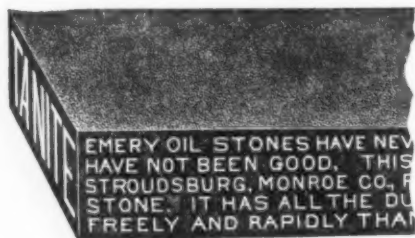


Fig. 1.—Solid Emery Oil Stone.

Fig. 2. The latter article consists of a wooden stick three times coated with fine emery, and is referred to as possessing especial advantages over the old-fashioned style and other goods for the purpose put on the market. Its durability, the efficiency with which it does its work, and the low price at which it is offered are points specially made in regard to it, and it is pointed out that it can be used for kitchen knives and carvers, for sickles, lawn-mower knives and other cutting instruments. The solid emery oil-stone



Fig. 2.—Knife Sharpener.

shown in Fig. 1 is described as in all respects similar in quality to the well-known Tanite emery-wheels. Two grades of these stones are made, one for putting on a rough edge and one for a cutting edge on fine tools. The rough-edge stone is described as doing the same work that the grindstone will, and it is claimed that its work is performed with exceptional ease. The company advise us that they are putting these goods on the market as a prominent line, and are intending to offer them exclusively to the hardware trade.

Curley's Patent Corkscrew.

This article, illustrated above, is put on the market by Dame, Stoddard & Kendall, Boston, Mass. It is made entirely of steel. As indicated in the cut, the shank of the screw is given play in the handle, with a construction which is referred to as affording a powerful leverage by which

the corkscrew is enabled to do its work with exceptional facility. The directions given for the use of the corkscrew are: That the bottle be placed on its base, the screw inserted in the cork in the ordinary way, and when the inside of the bell strikes the top of the bottle, the corkscrew is still kept turning, being slightly pulled at the same time, and in this manner it is claimed that the most obstinate corks can

be twisted out with ease. The screw is so adjusted in the handle that, when broken, a new one can be easily substituted.

The growth of Mexican trade is shown by Treasury Department statistics. During the fiscal year ending June last the total exports from this country were \$48,385,-

908, which is within a fraction of the exportations of the previous fiscal year. But the most remarkable fact is that the United States took 63 per cent. of the whole, while England and other European nations took only 37 per cent. The United States took in the previous fiscal year 56 per cent., showing that the trade between the two countries is growing with great rapidity. Three-quarters of all products other than precious metals are sold in the United States, and that country is the main reliance of the Mexican farmers in their efforts to enlarge their market. Leading Germans at the capital admit that the United States is absorbing the bulk of the Mexican trade. All custom houses whence exports are made to the United States show heavy gains.

We are informed that the report that the plant of the Lafayette Car Works, at Lima, Ohio, had recently resumed operations after a long shut-down is without

Grip Ice-Creeper.

The Improved All-Steel Grip Ice-Creeper illustrated in the accompanying cut is put

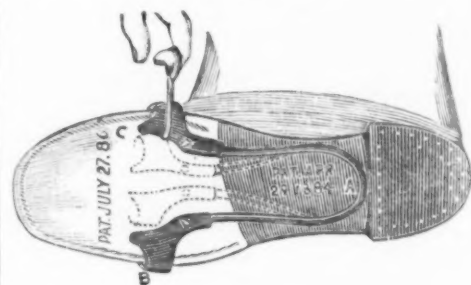


Curley's Patent Cork Screw.

on the market by the Penn Lock Works, 142 North Fourth street, Philadelphia, Pa., whose New York office is with W. H. Jacobus & Co., 90 Chambers street, New York. The points emphasized in regard to this creeper are that it has steel points; that no screws or straps are required; that it is quickly applied and will hold fast.

In applying, the part A is placed against the heel of the shoe, and acts as a brace, the clip B being placed on the outer edge of the sole, and the clip C sprung into place with the hand or button hook, as shown in the cut. The spring

and points of this creeper are made of tempered steel, and the clips of wrought steel. Three sizes are manufactured—No. 1 for



Improved All-Steel Grip Ice Creeper.

ladies, No. 2 for soles measuring less than 3½ inches in width, and No. 3 for soles measuring more than 3½ inches in width. They are packed one dozen pair in a box.

CURRENT HARDWARE PRICES.

NOVEMBER 21, 1888.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.

Caps, Perfection, 1000—

Hicks & Goldmark's	
F. L. Waterproof, 1-10's	60¢
E. B. Trimmed Edge, 1-10's	65¢
E. B. Ground Edge, Central Fire, 1-10's	70¢
Double Waterproof, 1-10's	1.40
Musket Waterproof, 1-10's	50¢
G. D.	28¢
B. B.	30¢
Union Metallic Cartridge Co.	
F. C. Trimmed	50¢
F. L. Ground	65¢
Gen. Fire Ground	70¢
Double Waterproof	1.40
Double Waterproof in 1-10's	1.40
A. B. Genuine Imported	46¢
Key's E. B.	54¢
Key's L. Waterproof, Central Fire	1.40

Cartridges—

Rim Fire Cartridges	dis 60¢ & 2¢
Rim Fire Military	dis 15¢ & 2¢
Central Fire Pistol and Rifle	dis 25¢ & 2¢
Central Fire, Military & Sporting	dis 15¢ & 2¢
Blank Cartridges, except 22 and 32 cal. an additional 10¢ over above discounts	
Blank Cartridges 22 cal.	\$1.75, dis 2¢
Blank Cartridges, 32 cal.	\$3.50, dis 2¢
Primed Shells and Bullets	dis 1¢ & 2¢
B. B. Caps, Round Ball	\$1.75, dis 2¢
B. B. Caps, Conical Ball, Swaged	\$2.00, dis 2¢

Primers—

Bertram Primers all sizes, and B. L. Caps for	
Sturtevant Shells	\$1.00, dis 2¢
All other Primers, all sizes	\$1.20, dis 2¢

Shells—

First quality, 4, 8, 10 and 12 gauge, dis 25¢ & 10¢	
First quality, 14, 16 and 20 gauge (\$10 list)	
Star, Club, Rival and 10 gauge, \$9 list	dis 33¢
Climax Brands, 12 gauge, \$8 list	& 10¢
Club, Rival and Climax Brands 14, 16 and 20 gauge	dis 30¢ & 10¢
Seibold's Combination Shot Shells	dis 15¢ & 2¢
Brass Shot Shells, 1st quality	dis 60¢ & 2¢
Brass Shot Shells, Club, Rival, Climax, 1st quality	dis 65¢ & 2¢
A. R. & C. Co., I. X. L., 10 & 12 gauge	dis 40¢ & 2¢
A. B. & C. Co., "Special," 14 gauge, dis 30¢ & 10¢	
A. R. & C. Co., "Special," 10 & 12 gauge, dis 40¢ & 10¢	
Fowler's Patent, 10 & 12 gauge, \$100	\$3.95

Shells Loaded—

List No. 19 1887	dis 20¢ & 10¢
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Wads—

U. M. C. & W. R. A.—B. E., 11 up	\$2.00
U. M. C. & W. R. A.—B. E., 9 & 10	2.30
U. M. C. & W. R. A.—B. E., 7 & 8	2.60
U. M. C. & W. R. A.—P. E., 11 up	3.10
U. M. C. & W. R. A.—P. E., 9 & 10	4.00
U. M. C. & W. R. A.—P. E., 7 & 8	4.90
Eley's B. E., 11 up	\$1.75
Eley's P. E., 11 up	\$2.80

Anvils—

Anvils—Eagle Anvils	\$104, dis 20¢ & 20¢
Peter Wright's	94¢
Armature's Mouse Hole	84¢
Armature's Mouse Hole, Extra	114¢
Trenton	94¢
Wilkinson's	94¢
J. & L. Carr. Patent Solid	114¢

Awls and Drills—

Millers Falls Co.	\$18.00, dis 20¢
Cheney Anvil and Vise	dis 25¢
Allen Combined Anvil and Vise	\$5, dis 40¢ & 10¢
Moore & Barnes Mfg. Co.	dis 33¢ & 10¢

Apple Parers.

Advance	doz. \$4.75
Antrim Combination	doz. 5.50
Baldwin	doz. 5.25
Champion	doz. 7.25
Eureka, 1888	each 17.00
Family Bay State	doz. 12.00
Gem	doz. 5.25
Gold Medal	doz. 4.00
Hudson's New 88	doz. 3.75
Ideal	doz. 4.75
Improved Bay State	doz. 30.00
Little Star	doz. 5.00
Monarch	doz. 13.50
New Lightning	doz. 5.50
Orion	doz. 4.00
Penn.	doz. 4.00
Perfection	doz. 4.00
Pomona	doz. 4.00
Rocking Table	doz. 6.00
Turntable	doz. 4.50
Victor	doz. 35.50
Waverly	doz. 4.50
White Mountain	doz. 4.50
72	doz. 4.25
75	doz. 5.75
78	doz. 6.50

Augers and Bits.

Douglas Mfg. Co.	
Wm. A. Ives & Co.	dis 70¢
Humphreysville Mfg. Co.	dis 70¢
French, Swift & Co. (F. H. Beecher)	
New Haven Copper Co.	dis 60¢ & 10¢ & 10¢
Cook's, Douglas Mfg. Co.	dis 60¢
Cook's, New Haven Copper Co.	dis 60¢ & 10¢ & 10¢
Ives' Circular Lip	dis 60¢
Patent Solid Head	dis 30¢
C. E. Jennings & Co., No. 10, extension	dis 40¢
C. E. Jennings & Co., No. 30	dis 60¢
C. E. Jennings & Co., Auger Bits, in fancy boxes	
Set, 32¢, 34¢, 36¢, 38¢, 40¢, 42¢, 44¢, 46¢, 48¢, 50¢, 52¢, 54¢, 56¢, 58¢, 60¢, 62¢, 64¢, 66¢, 68¢, 70¢, 72¢, 74¢, 76¢, 78¢, 80¢, 82¢, 84¢, 86¢, 88¢, 90¢, 92¢, 94¢, 96¢, 98¢, 1.00	dis 20¢
Low's Patent Single Twist	dis 45¢
Russell Jennings' Augers and Bits	dis 25¢
Imitation Jennings' Bits, new list	dis 60¢ & 10¢
Pugh's Black	dis 20¢
Car Bits	dis 50¢ & 10¢ & 10¢
L'Hommedieu Car Bits	dis 15¢ & 10¢
Forrester Pat. Auger Bits	dis 10¢

Bit Holders—

Ives	dis 25¢ & 10¢
French, Swift & Co.	dis 25¢ & 10¢
Douglas	dis 40¢ & 10¢
Bonner's Adjustable	dis 40¢ & 10¢
Stearns	dis 20¢
Ives Expansive, each \$4.50	dis 50¢ & 10¢
Universal Expansive, each \$4.50	dis 25¢ & 10¢
Wood's	dis 25¢ & 10¢

Expansive Bits—

Lark's small, \$18; large, \$35	dis 35¢ & 35¢
Ives' No. 4, per doz.	\$60
Swan	dis 40¢
Stearns' No. 1, \$26; No. 2, \$25	dis 35¢
Stearns' No. 3, \$48	dis 20¢
Patent Bits—	
Common	gross \$2.75 @ \$3.25
Diamond	gross \$1.10, dis 25¢ & 10¢
Rec	dis 25¢ & 25¢
Double Cut, Shephardson	dis 45¢ & 45¢
Double Cut, Valley Mfg. Co.	dis 30¢ & 10¢
Double Cut, Hartwell's	dis 35¢
Double Cut, Douglas	dis 40¢ & 10¢
Double Cut, Ives	dis 60¢ & 60¢

Stock Drills—

Worse Twist Drills	dis 50¢ & 10¢ & 5¢
Standard	dis 50¢ & 10¢ & 5¢
Cleveland	dis 50¢ & 10¢ & 5¢
Syracuse, for metal	dis 50¢ & 10¢ & 5¢
Syracuse, for wood (wood list)	dis 30¢ & 30¢
Williams or Holt's, for metal	dis 50¢ & 10¢ & 10¢
Williams or Holt's, for wood	dis 40¢ & 10¢

Patent Augers and Bits—

Commedieu's	dis 15¢ & 10¢
Patrons	dis 15¢ & 10¢
Snell's Snip Auger Pat. Car Bits	dis 15¢ & 10¢

Patent Bits—

Swing, Brass Ferrule	\$3.50 gross—dis 45¢ & 10¢
Patent Sewing, Short	\$1.00 gross—dis 40¢ & 10¢
Patent Sewing, Long	\$1.20 gross—dis 40¢ & 10¢
Patent Peg, Plain Top	\$10.00 gross—dis 45¢ & 10¢
Patent Peg, Leather	\$12.00 gross—dis 45¢ & 10¢

Awls and Tools, &c.

Wls. Sewing, Common	gross \$1.70—dis 35¢
Wls. Shouldered Peg	gross \$2.45—dis 40¢ & 10¢
Wls. Patent Peg	gross \$3.40—dis 40¢ & 10¢
Wls. Shouldered Brad	\$2.70 gross—dis 35¢
Wls. Handled Brad	\$7.50 gross—dis 45¢
Wls. Handled Scratch	\$7.50 gross—dis 35¢ & 10¢
Wls. Socket Scratch	\$1.50 gross—dis 25¢ & 30¢
Awls and Tool Sets, No. 20, \$10—dis 55¢ & 10¢	
Ray's Ad. Tool Hds., Nos. 1, 12; 2, 18; 3, 12; 4, 9	
Miller's Falls Ad. Tool Hds., Nos. 1, 12; 2, 18; 3, 12; 4, 9	
Tenny's Combination Haft	dis 25¢ & 10¢
Brad Sets, No. 42, \$10.50, No. 43, \$12.50	dis 70¢ & 10¢
Brad Sets, Stanley's Excelsior, No. 1, \$7.50	
Brad Sets, Stanley's Excelsior, No. 2, \$4.00	dis 30¢ & 10¢
Brad Sets, Stanley's Excelsior, No. 3, \$5.50	

Awls and Tools, &c.

Makers' and Special Brands—	
First quality	gross \$6.00 @ \$6.50
Others	gross \$5.50 @ \$5.75

Arts and Crafts—

Fraser's, in bulk	Keg \$1.40; 1/2 doz. \$1.50
Fraser's, in boxes	gross \$9.50
Dixon's Everlasting, in bxs.	dis 1.20; 2 b. \$2
Dixon's Everlasting	10 b. pails, each, 80¢
Lower grades, special brands	gross \$5.50 @ \$7
Arts and Crafts—	
No. 1, 4¢ @ 4 1/2¢; No. 2, 5¢ @ 5 1/2¢	
No. 3, 6¢ @ 6 1/2¢; No. 4, 7¢ @ 7 1/2¢	
No. 5, 8¢ @ 8 1/2¢; No. 6, 9¢ @ 9 1/2¢	
No. 7, 10¢ @ 10 1/2¢; No. 8, 11¢ @ 11 1/2¢	
No. 9, 12¢ @ 12 1/2¢; No. 10, 13¢ @ 13 1/2¢	
No. 11, 14¢ @ 14 1/2¢; No. 12, 15¢ @ 15 1/2¢	
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No. 69, 72¢ @ 72 1/2¢; No. 70, 73¢ @ 73 1/2¢	
No. 71, 74¢ @ 74 1/2¢; No. 72, 75¢ @ 75 1/2¢	
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No. 75, 78¢ @ 78 1/2¢; No. 76, 79¢ @ 79 1/2¢	
No. 77, 80¢ @ 80 1/2¢; No. 78, 81¢ @ 81 1/2¢	
No. 79, 82¢ @ 82 1/2¢; No. 80, 83¢ @ 83 1/2¢	
No. 81, 84¢ @ 84 1/2¢; No. 82, 85¢ @ 85 1/2¢	
No. 83, 86¢ @ 86 1/2¢; No. 84, 87¢ @ 87 1/2¢	
No. 85, 88¢ @ 88 1/2¢; No. 86, 89¢ @ 89 1/2¢	
No. 87, 90¢ @ 90 1/2¢; No. 88, 91¢ @ 91 1/2¢	
No. 89, 92¢ @ 92 1/2¢; No. 90, 93¢ @ 93 1/2¢	
No. 91, 94¢ @ 94 1/2¢; No. 92, 95¢ @ 95 1/2¢	
No. 93, 96¢ @ 96 1/2¢; No. 94, 97¢ @ 97 1/2¢	
No. 95, 98¢ @ 98 1/2¢; No. 96, 99¢ @ 99 1/2¢	
No. 97, 1.00 @ 1.00 1/2¢; No. 98, 1.01 @ 1.01 1/2¢	
No. 99, 1.02 @ 1.02 1/2¢; No. 100, 1.03 @ 1.03 1/2¢	

Patent Bits—

Patent Bits, \$10	dis 60¢
Patent Bits, \$15	dis 60¢
Patent Bits, \$20	dis 60¢
Patent Bits, \$25	dis 60¢
Patent Bits, \$30	dis 60¢
Patent Bits, \$35	dis 60¢
Patent Bits, \$40	dis 60¢
Patent Bits, \$45	dis 60¢
Patent Bits, \$50	dis 60¢
Patent Bits, \$55	dis 60¢
Patent Bits, \$60	dis 60¢
Patent Bits, \$65	dis 60¢
Patent Bits, \$70	dis 60¢
Patent Bits, \$75	dis 60¢
Patent Bits, \$80	dis 60¢
Patent Bits, \$85	dis 60¢
Patent Bits, \$90	dis 60¢
Patent Bits, \$95	dis 60¢
Patent Bits, \$100	dis 60¢

Patent Bits—

Patent Bits, \$10	dis 60¢
Patent Bits, \$15	dis 60¢
Patent Bits, \$20	dis 60¢
Patent Bits, \$25	dis 60¢
Patent Bits, \$30	dis 60¢
Patent Bits, \$35	dis 60¢
Patent Bits, \$40	dis 60¢
Patent Bits, \$45	dis 60¢
Patent Bits, \$50	dis 60¢
Patent Bits, \$55	dis 60¢
Patent Bits, \$60	dis 60¢
Patent Bits, \$65	dis 60¢
Patent Bits, \$70	dis 60¢
Patent Bits, \$75	dis 60¢
Patent Bits, \$80	dis 60¢
Patent Bits, \$85	dis 60¢
Patent Bits, \$90	dis 60¢
Patent Bits, \$95	dis 60¢
Patent Bits, \$100	dis 60¢

Patent Bits—

Patent Bits, \$10	dis 60¢
Patent Bits, \$15	dis 60¢
Patent Bits, \$20	dis 60¢
Patent Bits, \$25	dis 60¢
Patent Bits, \$30	dis 60¢
Patent Bits, \$35	dis 60¢
Patent Bits, \$40	dis 60¢
Patent Bits, \$45	dis 60¢
Patent Bits, \$50	dis 60¢
Patent Bits, \$55	dis 60¢
Patent Bits, \$60	dis 60¢
Patent Bits, \$65	dis 60¢
Patent Bits, \$70	dis 60¢
Patent Bits, \$75	dis 60¢
Patent Bits, \$80	dis 60¢
Patent Bits, \$85	dis 60¢
Patent Bits, \$90	dis 60¢
Patent Bits, \$95	dis 60¢
Patent Bits, \$100	dis 60¢

Patent Bits—

Patent Bits, \$10	dis 60¢
Patent Bits, \$15	dis 60¢
Patent Bits, \$20	dis 60¢
Patent Bits, \$25	dis 60¢
Patent Bits, \$30	dis 60¢
Patent Bits, \$35	dis 60¢
Patent Bits, \$40	dis 60¢
Patent Bits, \$45	dis 60¢
Patent Bits, \$50	dis 60¢
Patent Bits, \$55	dis 60¢
Patent Bits, \$60	dis

Wrought (Steel)—	
Fast Joint, Narrow.....	dis 70&10
Fast Joint, Lt. Narrow.....	dis 70&10
Fast Joint, Broad.....	dis 70&10
Loose Joint, Broad.....	dis 70&10
Table Butts, Back Flaps, &c.....	dis 70&10
Inside Blind, Regular.....	dis 70&10
Inside Blind, Light.....	dis 70&10
Loose Pin.....	dis 70&10
Bronzed Wrought Butts.....	dis 40&10 to 40&10&5

Callipers.—See Compasses.

Calks, Toe.	
Gautier.....	dis 54&6
Dewick.....	dis 54&6

Can Openers.

Messenger's Comet.....	dis 35.00, dis 25
American.....	dis 35.00
Duplex.....	dis 25, dis 15
Lyman.....	dis 35.75, dis 20
No. 4, French.....	dis 22.25, dis 55
No. 5, Iron handle.....	dis 22.50, dis 45
Eureka.....	dis 22.50, dis 10
Sardine Scissors.....	dis 22.75 to 30.00
Star.....	dis 22.75
Sprague, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	dis 22.00, dis 25
World's Butts.....	dis 22.00, dis 25
Universal.....	dis 22.00, dis 25
Domestic.....	dis 22.00, dis 25
Champion.....	dis 22.00, dis 25

Cards.

Horse and Curry.....	dis 10&10 to 10&10&10
Cotton.....	dis 10 to 10&10
Wool.....	dis 10 to 10&10

Carpet Stretchers.

Cast Steel, Polished.....	dis 22.25
Cast Iron, Steel Points.....	dis 22.00
Socket.....	dis 22.00
Bulldog.....	dis 22.00 to 25&10

Carpet Sweepers.

Bissell No. 5.....	dis 17.00
Bissell No. 7 New Drop Pan.....	dis 19.00
Bissell Grand.....	dis 19.00
Grand Rapids.....	dis 24.00
Crown Jewel.....	No. 1, \$18; No. 2, \$19; No. 3, \$20
Magie.....	dis 15.00
Jewell.....	dis 15.00
Improved Parlor Queen, Nickel Trimmed.....	dis 12.00
Improved Parlor Queen, Japanned Trimmed.....	dis 12.00

Excelsior.....	dis 22.00
Garland.....	dis 18.00
Parlor Queen.....	dis 22.00
Housewife's Delight.....	dis 15.00
Queen.....	dis 16.00
Queen, with band.....	dis 18.00
King.....	dis 18.00
Weed Improved.....	dis 18.00
Hub.....	dis 18.00
Cog Wheel.....	dis 16.00

Cartridges.—See Ammunition.

Casters.	
Bed.....	New list
Plate.....	dis 55 to 55&5
Shallow Socket.....	Others, dis 60 to 60&5
Deep Socket.....	dis 40&10
Yale Casters, list May, 1884.....	dis 50&10 to 60
Yale, Gem.....	dis 60&10 to 60&5
Martin's Patent (Phoenix).....	dis 45&10 to 50
Payson's Anti-Friction.....	dis 60 to 60&10
"Giant" Truck Casters.....	dis 10 to 10&5
Stationary Truck Casters.....	dis 45&10

Castles, Leaders.

Humason, Beckley & Co.'s.....	dis 70
Sargent's.....	dis 60&10 to 60
Hochkiss.....	dis 30
Peck Stow & W. Co.....	dis 50&10

Chain.

Trace, 6-10-2, exact sizes, pair, \$1.03.....	dis 50&10 to 50&10&5
Trace, 6-10-2, exact sizes, pair, 92.....	dis 50&10 to 50&10&5
Trace, 7-10-2, exact sizes, pair, 1.11.....	dis 50&10 to 50&10&5

NOTE.—Traces, "Regular" sizes 34 net pair less than exact.

Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1887.....	dis 50&10 to 50&10&5
American Coll. 3-16 5-16 7-16 9-16.....	dis 50&10 to 50&10&5
In cast lots, 8.75 6.25 5.00 4.00 4.00 3.75 3.50.....	dis 50&10 to 50&10&5
Less than cast lots, add 1/4¢ per lb.....	
German Coll, list of June 20, 1887.....	dis 50&10 to 50&10&5
Ger. Halter Chain, list of June 20, 1887.....	dis 50&10 to 50&10&5

Cover Halters, Hitching and Breast.

Covert Trace.....	dis 50&10 to 50&10&5
Onelida Halter Chain.....	dis 60 to 60&5
Galvanized Pump Chain.....	dis 51¢ to 6¢
Jack Chain, Iron.....	dis 70&10 to 75
Jack Chain, Brass.....	dis 65 to 70

Chain.—White.

Red.....	dis 70 to 75
Blue.....	dis 70 to 75
White Crayons.....	dis 12¢ to 12½¢

Chain Linen.—See Linen.

Chisels.

Socket Framing and Firmer—	
P. S. & W.....	dis 75&5
New Haven and Middlesex.....	dis 75&5
Mix.....	dis 75&5
Ohio Tool Co.....	dis 75&5
Buck Bros.....	dis 30 to 30&5
Merrill.....	dis 60&10 to 60&10&5
L. & J. White.....	dis 30 to 30&5
Wetherby and Douglass.....	dis 75 to 75&5
Tanged Firmers.....	dis 40&10 to 40&10&5
Tanged Firmers, Butcher's.....	dis 40&10 to 40&10&5
Tanged Firmers, Spear & Jackson's.....	dis 40&10 to 40&10&5
Tanged Firmers, Buck Bros.....	dis 40&10 to 40&10&5
Cold Chisels.....	dis 10 to 10&5

Chucks.

Beach Patent.....	each, \$8.00, dis 20
Morse's Adjustable.....	each, \$7.00, dis 20 to 20&5
Danbury.....	each, \$6.00, dis 30 to 30&5
Syracuse, Balz Pat.....	dis 25

Clumps.

Providence Tool Co.'s Wrought Iron.....	dis 25
Adjustable, Gray.....	dis 20
Adjustable, Amber.....	dis 20
Adjustable, Snow's.....	dis 40&5
Adjustable, Hammer's.....	dis 15
Adjustable, Stearns.....	dis 20&10
Stearns' Adjustable Callet and Corner.....	dis 20&10
Cabinet, Sargent's.....	dis 60&10 to 60&10&5
Carriage Makers' Sargent's.....	dis 70&10 to 70&10&5
Eberhard Mfg. Co.....	dis 40&5 to 40&10
Warner's.....	dis 40&10 to 40&10&5
Saw Clamps.....	See Vices

Clips.

Norway, Axle, 4 & 5-16.....	dis 55&5 to 55&5&5
Second grade Norway Axle, 4 & 5-16.....	dis 55&5 to 55&5&5
Superior Axle Clips, 4-16.....	dis 60&5 to 60&5&5
Norway Spring Bar Clips, 5-16.....	dis 60&5 to 60&5&5
Wrought-Iron Felloe Clips.....	dis 5¢
Steel Felloe Clips.....	dis 25
Baker Axle Clips.....	dis 25

Lockers.

Lockers.....	dis 50
Locks, Brass.—Hardware list.....	dis 40&10 to 40&10&5

Coffee Mills.

Box and Side, list revised Jan. 1, 1888.....	dis 50&5 to 50&5&5
American, Enterprise Mfg Co.....	dis 20&10 to 20&10&5
The "Swift," Lane Bros.....	dis 20&10 to 20&10&5

Compasses, Dividers, &c.

Compasses, Callipers, Dividers.....	dis 70 to 70&10
Gemis & Call Co.'s Dividers.....	dis 60&5
Gemis & Call Co.'s Compasses & Callipers.....	dis 50&5
Gemis & Call Co.'s Wing & Inside or Outside.....	dis 50&5
Gemis & Call Co.'s Double.....	dis 50
Gemis & Call Co.'s Call's Patent.....	dis 50
Excelsior.....	dis 50
Stevens & Co.'s Callipers and Dividers.....	dis 25&10
Starrett's Spring Callipers and Dividers.....	dis 25&10 to 25&10&5
Starrett's Lock Callipers and Dividers.....	dis 25&10
Starrett's Combination Dividers.....	dis 25&10

Compass Tools.

Bradley's.....	dis 20
Barton's.....	dis 20 to 20&5
L. & J. White.....	dis 20&5
Albertson Mfg. Co.....	dis 25
Beatty's.....	dis 40 to 40&5
Sandusky Tool Co.....	dis 30 to 30&5

Corkscrews.

Humason & Beckley Mfg. Co.....	dis 40 to 40&10
Clough's Patent.....	dis 33&5 to 33&5&5
Howe Bros. & Hulbert.....	dis 35

Corn Knives and Cutters.

Bradley's.....	dis 10
Wadsworth's.....	dis 25
Crades.....	dis 50&2
Crow Bars.—Cast Steel.....	dis 4
Iron, Steel Points.....	dis 34¢

Curry Combs.

Fitch & Co.....	dis 50&10 to 50&10&10
Rubber.....	dis 10.00, dis 20
Perfect.....	dis 10

Curtain Pins.—Silvered Glass.

White Enamel.....	net
Beaver Falls and Booth's.....	dis 33&4
Wostenholme.....	\$7.75 to 10

Dampers, &c.

Dampers, Buffalo.....	dis 50
Buffalo Damper Clips.....	dis 50
Crown Damper.....	dis 40
Excelsior.....	dis 40&10

Dividers.—See Compasses.

Dog Collars.	
Embroidered Gilt, Pope & Stevens' list.....	dis 30&10
Leather, Pope & Stevens' list.....	dis 40
Brass, Pope & Stevens' list.....	dis 40

Door Springs.

Torrey's Rod, regular size.....	dis 13.00
Gray's.....	dis 20, dis 20
See Rod.....	dis 20, dis 20
Warner's No. 1.....	dis 22.50, No. 2, \$3.30, dis 40&10 to 50
Gem Coll, list April 19, 1888.....	dis 10
Star Coll, list April 19, 1888.....	dis 20
Victor Coll.....	dis 60 to 60&10
Champion Coll.....	dis 60&10 to 60&10&10
Philadelphia.....	dis 75, dis 75
Cowell's.....	No. 1, \$18.00; No. 2, \$15.00, dis 35
Rubber, complete.....	dis 4.50, dis 55&10
Hercules.....	dis 50
Shaw Door Check and Spring.....	dis 25 to 30 to 35
Elliott's Door Check and Spring.....	dis 25

Drilling Knives.

P. S. & W.....	dis 75&5
Mix.....	dis 75&5
New Haven and Middlesex.....	dis 60&10 to 60&10&10
Merrill.....	dis 75 to 75&5
Wetherby and Douglass.....	dis 15&10 to 25
Watrous.....	dis 20&5
Victor J. White.....	dis 25
Bradley's.....	dis 35
Adjustable Handle.....	dis 25 to 33&4
Wilkinson's Folding.....	dis 25 to 25&5

Drills and Drill Stocks.

Blacksmith's.....	each, \$1.75
Blacksmith's Self Feeding.....	each, \$7.50, dis 20
Breast, P. S. & W.....	dis 40&10
Breast, Wilson's.....	dis 30&5
Breast, Millers Falls.....	each, \$3.00, dis 25
Breast, Bartholomew's.....	each, \$2.50, dis 25&10 to 40
Ratchet, Merrill's.....	dis 20 to 20&5
Ratchet, Ingalls'.....	dis 20 to 20&5
Ratchet, Parker's.....	dis 20 to 20&5
Ratchet, Whitney's.....	dis 20&10
Ratchet, Weston's.....	dis 20 to 25
Ratchet, Moore's Triple Action.....	dis 25 to 30
Whitney's Hand Drill, Plain, \$11.00, Adjustable.....	dis 12.00, dis 12
Wilson's Drill Stocks.....	dis 1
Automatic Boring Tools.....	each, \$1.75 to \$1.50

Twist Drills.

Morse.....	dis 50&10&5
Standard.....	dis 50&10&5
Syracuse.....	dis 50&10&5
Cleveland.....	dis 50&10&5
Williams.....	dis 50&10&5

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans.—Small sizes.

Large sizes.....	dis 64¢
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Egg Beaters.

Beaver.....	dis 22.00
National.....	dis 25.00, dis 33&5
Family (T. & S. Mfg. Co.).....	dis 17.00 to 18.00
Kingston (Standard Co.).....	dis 10.00
Acme (Standard Co.).....	dis 10.00
Duplex (Standard Co.).....	dis 10.00
Duplex, extra heavy.....	dis 10.00
Rival (Standard Co.).....	dis 10.00
Triumph (T. & S. Mfg. Co.).....	dis 10.00 to 11.50
Advance No. 1.....	dis 10.00
Advance No. 2.....	dis 10.00
Bryant's.....	dis 10.00
Ayres' Spiral.....	dis 10.00
Double (Hamblin & Russell Mfg. Co.).....	dis 10.00
Easy (Hamblin & Russell Mfg. Co.).....	dis 10.00
Triple (Hamblin & Russell Mfg. Co.).....	dis 10.00
Spiral (Hamblin & Russell Mfg. Co.).....	dis 10.00
Faine, Dient & Co's.....	dis 10.00

Egg Poachers.

Buffalo Steam Egg Poachers, No. 1, 80 doz.....	dis 25
No. 2, 80 doz.....	dis 25
Electric Bell Mfg. Co., Wollensak's.....	dis 20
Bigelow & Dowse.....	dis 20

Flour.

No. 4 to No. 54 to Flour, CF.....	dis 20
No. 4 to No. 54 to Flour, FF.....	dis 20

Flour.

Eggs, No. 4.....	dis 20
Eggs, No. 5.....	dis 20
Eggs, No. 6.....	dis 20
Eggs, No. 7.....	dis 20
Eggs, No. 8.....	dis 20
Eggs, No. 9.....	dis 20
Eggs, No. 10.....	dis 20
Eggs, No. 11.....	dis 20
Eggs, No. 12.....	dis 20
Eggs, No. 13.....	dis 20
Eggs, No. 14.....	dis 20
Eggs, No. 15.....	dis 20
Eggs, No. 16.....	dis 20
Eggs, No. 17.....	dis 20
Eggs, No. 18.....	dis 20
Eggs, No. 19.....	dis 20
Eggs, No. 20.....	dis 20
Eggs, No. 21.....	dis 20
Eggs, No. 22.....	dis 20
Eggs, No. 23.....	dis 20
Eggs, No. 24.....	dis 20
Eggs, No. 25.....	dis 20
Eggs, No. 26.....	dis 20
Eggs, No. 27.....	dis 20
Eggs, No. 28.....	dis 20
Eggs, No. 29.....	dis 20
Eggs, No. 30.....	dis 20
Eggs, No. 31.....	dis 20
Eggs, No. 32.....	dis 20
Eggs, No. 33.....	dis 20
Eggs, No. 34.....	dis 20
Eggs, No. 35.....	dis 20
Eggs, No. 36.....	dis 20
Eggs, No. 37.....	dis 20
Eggs, No. 38.....	dis 20
Eggs, No. 39.....	dis 20
Eggs, No. 40.....	dis 20
Eggs, No. 41.....	dis 20
Eggs, No. 42.....	dis 20
Eggs, No. 43.....	dis 20
Eggs, No. 44.....	dis 20
Eggs, No. 45.....	dis 20
Eggs, No. 46.....	dis 20
Eggs, No. 47.....	dis 20
Eggs, No. 48.....	dis 20
Eggs, No. 49.....	dis 20
Eggs, No. 50.....	dis 20
Eggs, No. 51.....	dis 20
Eggs, No. 52.....	dis 20
Eggs, No. 53.....	dis

Hickory Firmer Chisel, assorted..... gross 4.50
 Hickory Firmer Chisel, large..... gross 5.00
 Apple Firmer Chisel, assorted..... gross 5.00
 Apple Firmer Chisel, large..... gross 5.00
 Socket Firmer Chisel, assorted..... gross 5.00
 Socket Framing Chisel, assorted..... gross 5.00
 J. B. Smith Co.'s Pat. File..... dis 50
 File, assorted..... gross 2.75 dis 40
 Auger, assorted..... gross 5.00 dis 40
 Auger, large..... gross 7.00 dis 40
 Patent Auger, Douglas..... set \$1.25 net
 Patent Auger, Swan's..... set \$1.00 net
 Hoe, Rake, Shovel, &c..... dis 50
 Cross Cut Saw Handles—
 Atkins' No. 1 Loop, pair, 30# No. 3, 22# No. 2
 and No. 4 Reversible, 22#
 Roynton's Loop Saw Handles..... 50# dis 60
 Chumblion

Hangers.
 Barn Door, old patterns..... dis 60
 Barn Door, New England..... dis 60
 Samson Steel Anti-Friction..... dis 55
 Orleans Steel..... dis 55
 Hamilton Wrought Wood Track..... dis 55
 U. S. Wood Track..... dis 60
 Chumblion..... dis 60
 Rider and Wooster, Medina Mfg. Co.'s List..... dis 7
 Climax Anti-Friction..... dis 50
 Climax Steel Anti-Friction..... dis 50
 Zenith for Wood Track..... dis 55
 Reed's Steel Arm..... dis 55
 Challenge, Barn Door..... dis 55
 Sterling Improved (Anti-Friction)..... dis 55
 Victor, No. 1, 15#; No. 2, 10#; No. 3, 11#..... dis 55
 Cheritree..... dis 55
 Kidder's..... dis 55
 The "Boss"..... dis 55
 Best Anti-Friction..... dis 55
 Dugler (Wood Track)..... dis 55
 Terry's Patent..... dis 55
 Cronk's Patent..... dis 55
 Wood Track Iron Clad..... dis 55
 Carrier Steel Anti-Friction..... dis 55
 Architect..... dis 55
 Eclips..... dis 55
 Felix..... dis 55
 Richards..... dis 55
 Lane's Steel Anti-Friction..... dis 55
 The Ball Bearing Door Hanger..... dis 55
 Warner's Patent..... dis 55
 Stearns' Anti-Friction..... dis 55
 Stearns' Challenge..... dis 55
 Faultless..... dis 55
 American..... dis 55
 Rider & Wooster, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Shepard's Noiseless Niagara, Buffalo, Champion,
 Steamboat, Clark's Old Pattern and Clark's Tip
 Pattern..... dis 75
 Shepard's O. S. Lull & Porter..... dis 75
 Shepard's Acme, Lull & Porter..... dis 75
 Shepard's Queen City Reversible..... dis 75
 Clark's Lull & Porter, Nos. 9, 1, 14, 2, 24, 3..... dis 75
 North's Automatic Blind Fixtures, No. 2, for
 Wood, \$10.50; No. 3, for Brick, \$13.50..... dis 25
Handled.
 Garden, Mortar, &c..... dis 65
 Planter's, Cotton, &c..... dis 65
 Warren Hoe..... dis 65
 Magic..... dis 65
 D. & H. Seovil..... dis 20
 Lane's Crescent Scovill Pattern..... dis 45
 Lane's Crescent Planter's Pattern..... dis 45
 Lane's Razor Blade, Scovill Pattern..... dis 30
 Maynard, S. & O. Pat..... dis 45
 Sandusky Tool Co.,..... dis 60
 Hubbard & Co.,..... dis 60
 Bay..... dis 60
 Hub..... dis 60
Hog Rings and Ringers.
 Hill's Improved Ringers..... dis 50
 Hill's Old Style Ringers..... dis 50
 Hill's Tongues..... dis 50
 Hill's Ringers..... dis 50
 Perfect Ringers..... dis 50
 Perfect Ringers..... dis 50
 Half's Hog Ringers..... dis 50
 Half's Hog Ringers..... dis 50
 Champion Ringers..... dis 50
 Champion Ringers, Double..... dis 50
 Brown's Ringers..... dis 50
 Brown's Ringers..... dis 50
Holding Apparatus.
 "Moore's" Hand Hoist, with Lock Brake..... dis 70
 "Moore's" Differential Pulley Block..... dis 70
Holders, File and Tool.
 Raiz Pat..... dis 50
 Nicholson File Holders..... dis 20
Hollow-Ware.
 Stove Hollow-Ware, Ground..... dis 60
 Stove Hollow-Ware, Ground..... dis 60
 Kneaded and Tinned Hollow-Ware..... dis 70
 Oval Boilers, Saucepans & Blue Pots..... dis 70
 Gray Enamelled Ware..... dis 50
 Akate and Granite Ware..... dis 50
 Rustless Hollow-Ware..... dis 50
 Galvanized Tea-Kettles..... dis 50
 Each..... dis 50
 Silver Plated—4 mo. or 5 1/2 wash in 30 days..... dis 40
 Meriden Britannia Co..... dis 40
 Simpson, Hall, Miller & Co..... dis 40
 Rogers & Brothers..... dis 40
 Hartford Silver Plate Co..... dis 40
 William Rogers Mfg. Co..... dis 40
Hooks.
 Cast Iron—
 Bird Cage, Sargent's List..... dis 60
 Bird Cage, Reading List..... dis 60
 Clothes Line, Sargent's List..... dis 60
 Clothes Line, Reading List..... dis 60
 Ceiling, Sargent's List..... dis 60
 Ceiling, Reading List..... dis 60
 Coat and Hat, Sargent's List..... dis 60
 Coat and Hat, Reading List..... dis 60
 Wrought Iron—
 Cotton..... dis 60
 Cotton Pat. N. Y. Mallet & Handle Wks..... dis 30
 Tassel and Picture T. & S. Mfg. Co..... dis 50
 Wrought Staples, Hooks, &c..... See Wrought Staples
 Bench Hooks..... See Bench Hooks
 Wire Coat and Hat, Gem, list April, 1888..... dis 45
 Wire Coat and Hat, Miles, list April, 1888..... dis 45
 Indestructible Coat and Hat..... dis 45
 Wire Coat and Hat, Standard..... dis 45
 Belt..... dis 75
 Grass..... dis 50
 Whitcomb Patent..... dis 50
 Hooks and Eyes—Malleable iron..... dis 70
 Hooks and Eyes—Brass..... dis 60
 Fish Hooks, American..... dis 50
Horse Nails.
 Available..... dis 25
 Clinton, Fin. 24# 22# 21# 20# 19#..... dis 40
 Essex..... dis 25
 Lyra..... dis 25
 Snowden..... dis 25
 Putnam..... dis 25
 Vulcan..... dis 25
 Northwest..... dis 25
 Globe..... dis 25
 A. C..... dis 25
 C. B. K..... dis 25
 Champlain..... dis 25
 New Haven..... dis 25
 Saranac..... dis 25
 Champion..... dis 25
 Capwell..... dis 25
 Star..... dis 25
 Anchor..... dis 25
 Western..... dis 25
 Empire..... dis 25
Horse Shoes.
 Lock Ass'n's list Dec. 30, 1888..... dis 50
 Eagle, Cabinet, Trunk and Padlock..... dis 35
 Hotchkiss' Brass Blanks..... dis 40
 Hotchkiss' Copper and Tinned..... dis 40
 Hotchkiss' Padlock and Cabinet..... dis 40
 Hatchet Bed Keys..... dis 40
 Wollensack, Tinned..... dis 40
Little Sharpeners.
 Parkin's Applewood Handles..... dis 40
 Parkin's Rosewood or Cocobolo..... dis 40
 Ames' Shoe Knives..... dis 20
 Foster Bros., Butcher, &c..... dis 40
 Ames' Butcher Knives..... dis 40
 Ames' Shoe Knives..... dis 20
 Ames' Bread Knives..... dis 20
 Moran's Shoe and Bread Knives..... dis 20
 Hay and Straw..... See Hay Knives
 Table and Pocket..... See Cutlery
Is new.
 Door Mineral..... dis 65
 Door Por Jap'd..... dis 75

Door Por. Por. Nickel..... dis 25
 Door Por. Plated, Nickel..... dis 25
 Drawer, Porcelain..... dis 55
 Remate Door Knob, New List..... dis 40
 Yale & Towne Wood Knobs, list Dec. 1885..... dis 40
 Furniture Plain..... dis 75
 Furniture, Wood Screws..... dis 25
 Base, Rubber Tip..... dis 70
 Picture, Judd's..... dis 60
 Picture, Sargent's..... dis 70
 Picture, Hemacite..... dis 35
 Shutter, Porcelain..... dis 65
 Carriage, Japanned..... gross 80, dis 60
Ladies.
 Melting, Sargent's..... dis 55
 Melting, Reading..... dis 35
 Melting, Monroe's Patent..... dis 40
 Melting, P. S. & W..... dis 35
 Melting, Warner's..... dis 30
Lawn Mowers.
 Standard List..... dis 50
 Enterprise..... dis 60
Lanterns.
 Tubular, Plain, with Guards..... dis 40
 Tubular, Lift Wire, with Guards..... dis 45
 Tubular, Square Plain, with Guards..... dis 45
 Tubular, Sq. Lift Wire, with Guards..... dis 45
 Tubular, Guards, 25# dozen less..... dis 45
 Tubular, Small, 10#; Med. 17.25; Large, 19.75, dis 20
Lemon Macewars.
 Corbin Lined, No. 1..... dis 30
 Wood, No. 2..... dis 30
 Wood, Common..... dis 1.70
 Dunlap's Improved..... dis 1.70
 Jamieson, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830,

Hyman Lark, Quality White only.....	27 65	27 65
Hyman Spring, Extra Braided, White.....	30 00	30 00
Hyman Spring, Extra Braided, Drab.....	30 00	30 00
Semper Idem, Braided, White.....	30 00	30 00
Egyptian, India Hemp, Braided.....	35 00	35 00
Samson, Braided, White Cotton.....	50 00	30 00
Samson, Braided, Drab Cotton.....	55 00	30 00
Samson, Braided Italian Hemp.....	55 00	30 00
Samson Braided Linen.....	80 00	30 00
Sash Locks.		
Clark's No. 1, \$10.00; No. 2, \$8.00 $\frac{1}{2}$ gross.....	dis 32 1/2	33 1/2
Ferguson's.....	dis 33 1/2	33 1/2
Morris and Triumph, list Aug. 16, 1888.....	dis 30 1/2	31 1/2
Victor.....	60 1/2	10 1/2
Walkers.....	dis 10 1/2	10 1/2
Wm. Hfg. Co.....	dis 25 1/2	33 1/2
Reading.....	dis 60 1/2	60 1/2
Hammond's Window Springs.....	dis 40 1/2	40 1/2
Common Sense, Jap. d. Cop'd and Br'ed.....	$\frac{1}{2}$ gross 41 00	
Common Sense, Nickel Plated.....	$\frac{1}{2}$ gross 41 00	
Universal.....	dis 30 1/2	30 1/2
Atkins's Gravity.....	dis 60 1/2	60 1/2
Kempshall's Model.....	dis 60 1/2	60 1/2
Corbin's Daisy, list February 15, 1888.....	dis 70 1/2	70 1/2
Payson's Perfect.....	dis 60 1/2	60 1/2
Hugulin's New and Improved Adjustable Sash Locks, list Jan. 5, 1887.....	dis 25 1/2	25 1/2
Stoddard's "Practical" Sash Locks, list Jan. 5, '87.....	dis 25 1/2	25 1/2
Ives Patent.....	dis 10 1/2	10 1/2
Liesche's Nos. 100 & 110 $\frac{1}{2}$ gro. \$8; 106, \$10, dis 20 1/2	dis 20 1/2	20 1/2
Davis, Bronze, Barnes Mfg. Co.....	dis 50 1/2	50 1/2
Champion Safety, list March 1, 1888.....	dis 55 1/2	55 1/2
Security.....	dis 70 1/2	70 1/2
Sash Weights.		
Solid Eyes.....	$\frac{1}{2}$ ton 82 1/2	
Sausage Stuffers or Fillers.		
Miles' "Challenge".....	$\frac{1}{2}$ dos. \$20, dis 50 1/2	50 1/2
Perry.....	$\frac{1}{2}$ dos. No. 1, \$10; No. 0, \$21, dis 50 1/2	50 1/2
Draw Cut No. 4.....	each, \$30.00, dis 20 1/2	20 1/2
Enterprise Mfg Co.....	dis 30 1/2	30 1/2
Saws.		
Disston's Circular.....	dis 45 1/2	45 1/2
Disston's Cross Cuts, dis 45 1/2	45 1/2	45 1/2
Disston's Hand.....	dis 25 1/2	25 1/2
Atkins' Circular.....	dis 50 1/2	50 1/2
Atkins' Silver Steel Diamond X Cuts.....	dis 70 1/2	70 1/2
Atkins' Special Steel Dexter X Cuts.....	dis 60 1/2	60 1/2
Atkins' Special Steel Diamond X Cuts.....	dis 60 1/2	60 1/2
Atkins' Champion and Electric Tooth X Cuts.....	dis 27 1/2	27 1/2
Atkins' Hollow Back X Cuts.....	dis 15 1/2	15 1/2
Atkins' Shingle, Pulley, Drag, &c.....	dis 30 1/2	30 1/2
W. M. & C., Hand.....	dis 30 1/2	30 1/2
W. M. & C. Champion X Cuts, Regular $\frac{1}{2}$ foot.....	dis 24 1/2	24 1/2
W. M. & C. X Cuts Thin Back.....	dis 27 1/2	27 1/2
Peace Circular and Mill.....	dis 45 1/2	45 1/2
Peace Hand Panel and Rip.....	dis 20 1/2	20 1/2
Peace Cross Cut, Standard.....	dis 25 1/2	25 1/2
Peace Circular and Mill.....	dis 45 1/2	45 1/2
Richardson's Circular and Mill.....	dis 45 1/2	45 1/2
Richardson's X-Cuts, No. 1, \$30; No. 3, \$70; No. 4, \$24	dis 45 1/2	45 1/2
Saw Blades.		
Griffin's Hack saws, complete.....	dis 40 1/2	40 1/2
Griffin's Hack Saw, Blades only.....	dis 40 1/2	40 1/2
Star Hack Saws and Blades.....	dis 25 1/2	25 1/2
Eureka and Crescent.....	dis 25 1/2	25 1/2
Saw Frames.		
White Vermont.....	$\frac{1}{2}$ gro 80 1/2	80 1/2
Red, Polished, and Varished.....	$\frac{1}{2}$ dos \$1.50, dis 25 1/2	25 1/2
Saw Sets.		
Stittman's Genuine.....	$\frac{1}{2}$ dos \$5.00 and \$7.75, dis 40 1/2	40 1/2
Stittman's Imita.....	$\frac{1}{2}$ dos \$3.25 and \$5.25, dis 40 1/2	40 1/2
Common Lever.....	$\frac{1}{2}$ dos \$2.00, dis 40 1/2	40 1/2
Morrill's No. 1, \$15.00; No. 4, \$24.....	dis 40 1/2	40 1/2
Leach's.....	No. 0, \$8.00; No. 1, \$15.00, dis 15 1/2	15 1/2
Nash's.....	dis 20 1/2	20 1/2
Hammer, Hotchkiss.....	\$6.50, dis 10 1/2	10 1/2
Hammer, Bemis & Call Co.'s new Patent.....	dis 30 1/2	30 1/2
Bemis & Call Co.'s Lever and Spring Hammer, dis 30 1/2	30 1/2	30 1/2
Bemis & Call Co.'s Flat Back.....	dis 13 1/2	13 1/2
Bemis & Call Co.'s Cross Cut.....	dis 13 1/2	13 1/2
Alken's Genuine.....	\$13.00, dis 50 1/2	50 1/2
Alken's Imitation.....	\$7.00, dis 50 1/2	50 1/2
Hart's Patent Lever.....	dis 20 1/2	20 1/2
Hart's Star, 29, No. 18, \$5.50, dis 20 1/2	20 1/2	20 1/2
Atkins.....	per dos No. 1, \$4.00; No. 2, \$5.00	
Atkins Criterion.....	per dos 40 1/2	40 1/2
Crossman & Keller, No. 1, \$15.00; No. 2, \$24.00.....	dis 40 1/2	40 1/2
Saw Tools.		
Atkins Perfection.....	\$15.00; Excelsior \$6.00 $\frac{1}{2}$ dos	
Scenes.		
Hatch, Planter, No. 171, good quality.....	$\frac{1}{2}$ dos \$21	
Hatch, Tea, No. 161.....	$\frac{1}{2}$ dos \$4.75 @ \$7.00	
Union Platform, Plain.....	\$2.10 @ 2.20	
Union Platform, Striped.....	\$2.20 @ 2.30	
Chattillon's Grocers' Trip Scales.....	dis 50 1/2	50 1/2
Chattillon's Trip Scales.....	dis 40 1/2	40 1/2
Chattillon's Favorite.....	dis 40 1/2	40 1/2
Warrity Turnbills.....	dis 30 1/2	30 1/2
Rienle B. os.' Platform.....	dis 5 1/2	5 1/2
Scale Beams.		
Seair Beams, list of Jan. 12, 84.....	dis 50 1/2 @ 50 1/2	50 1/2
Chattillon's No. 1.....	dis 40 1/2	40 1/2
Chattillon's No. 2.....	dis 50 1/2	50 1/2
Screen Boards.		
Adjustable Box Scraper (S. R. & L. Co.) \$6.50, dis 30 1/2	30 1/2	
Box, 1 Handle.....	$\frac{1}{2}$ dos \$4.00, dis 10 1/2	10 1/2
Box, 2 Handle.....	$\frac{1}{2}$ dos \$4.00, dis 10 1/2	10 1/2
Defiance Box and Ship.....	dis 20 1/2	20 1/2
Ship, Hammond.....	dis 50 1/2	50 1/2
Ship, Providence Tool Co.....	$\frac{1}{2}$ dos \$3.50 net	
Ship, Providence Tool Co.....	dis 10 1/2	10 1/2
Screen Window and Door Frames.		
Porter's Pat. Window and Door Frame.....	dis 33 1/2 @ 10 1/2	33 1/2
Screen Corner Irons, Warner's.....	dis 33 1/2 @ 33 1/2	33 1/2
Stearns' Frames and Corners.....	dis 25 1/2 @ 25 1/2	25 1/2
Screen Windows.		
Douglas Mfg Co.....	dis 20 1/2 @ 10 1/2	20 1/2
Disston's.....	dis 45 1/2	45 1/2
Disston's Patent Excelsior.....	dis 45 1/2	45 1/2
Buck Bros.....	dis 30 1/2	30 1/2
Stanley R. & L. Co.'s Varished Handles.....	dis 65 1/2	65 1/2
Stanley R. & L. Co.'s Black Handles.....	dis 60 1/2	60 1/2
Sargent & Co.'s No. 1 Forged Handle.....	dis 60 1/2 @ 10 1/2	60 1/2
Sargent & Co.'s Nos. 20, 10 and 60.....	dis 60 1/2 @ 10 1/2	60 1/2
Knapp & Cowles' No. 1.....	dis 60 1/2 @ 70 1/2	60 1/2
Knapp & Cowles' No. 1 Extra.....	dis 60 1/2 @ 60 1/2	60 1/2
Knapp & Cowles' No. 00 & 1.....	dis 50 1/2 @ 50 1/2 @ 35 1/2	50 1/2
Gay & Parsons.....	dis 15 1/2	15 1/2
Champion.....	dis 25 1/2	25 1/2
Clark's Patent.....	dis 30 1/2 @ 33 1/2	30 1/2
Crawford's Adjustable.....	dis 30 1/2	30 1/2
Elrich's Socket and Ratchet.....	dis 25 1/2 @ 25 1/2	25 1/2
Elrich's Socket and Ratchet.....	$\frac{1}{2}$ dos 30, dis 25 1/2	25 1/2
Kolb's Corner Sash.....	dis 25 1/2	25 1/2
Syracuse Screw-Drive Bits.....	dis 30 1/2 @ 30 1/2	30 1/2
Screw Driver Bits.....	$\frac{1}{2}$ dos, 50 1/2 @ 75 1/2	50 1/2
Screw Driver Bits, Parr's.....	$\frac{1}{2}$ gro 65 1/2	65 1/2
Tray & Hol. Hdie. Steel, No. 3, \$12.....	dis. 25 @ 25 1/2 @ 10 1/2	25 1/2
Tray & Co.'s, all Steel.....	dis 50 1/2	50 1/2
Refr.		
#Wood Scales—list, Brass, Jan. 27; Iron, July 1, 1887		
Flat Head Iron.....	dis 70 1/2	70 1/2
Round Head Iron.....	dis 65 1/2	65 1/2
Flat Head Brass.....	dis 65 1/2	65 1/2
Round Head Brass.....	dis 60 1/2	60 1/2
Broad Head Brass.....	dis 60 1/2	60 1/2
Round Head Brass.....	dis 60 1/2	60 1/2
Round Head Brass.....	dis 60 1/2	60 1/2
Round Head Brass.....	dis 60 1/2	60 1/2
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Round Head Brass.....	dis 60 1/2	60 1/2
Round Head Brass.....	dis 60 1/2	60 1/2
Round Head		

[illegible]

CURRENT METAL PRICES.

NOVEMBER 21, 1888.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
1 to 2 in. round and square...	1.90 @ 2.00¢
1 to 6 in. x 3/4 to 1 in.	
Refined Iron:	
1 to 2 in. round and square...	2.10 @ ...
1 to 4 in. x 3/4 to 1 1/4 in.	
4 1/2 to 6 in. x 3/4 to 1 in.	
1 to 6 in. x 1/2 and 5-16	2.30 @ ...
Rods—1/2 and 11-16 round and sq. ...	2.30 @ ...
Bands—1 to 6 x 3-16 to No. 12	2.30 @ 2.4¢
"Burden Best" Iron, base price	3.00 @ ...
Burden's "H. B. & S." Iron, base price	2.80 @ ...
"Ulster"	3.10 @ ...
Norway Rods	4.00 @ 5.00¢

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery,	
Toe Calk, Tire and Sleigh Shoe, base price in small lots	2 1/2¢ @ 3¢
Best Cast Steel, base price in small lots	2 1/2¢ @ 3¢
Best Cast Steel Machinery, base price in small lots	5 1/2¢ @ 6¢

For Classification and Extras adopted by the Merchant Steel Association of the United States, June 1, 1888, see *The Iron Age*, June 21, 1888.

Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16	2.75 @ 2.80¢
17 to 20	2.85 @ 3.00¢
21 to 24	3.00 @ 3.10¢
25 and 26	3.20 @ 3.50¢
27	3.35 @ 3.37¢
28	3.50 @ 4.00¢
B. R.	2d qual.
Galv'd, 14 to 20	4.50 @ 4.88¢
Galv'd, 1 to 24	4.87 1/2 @ 4.75¢
Galv'd, 25 to 26	5.25 @ 5.12¢
Galv'd, 27	5.62 1/2 @ 5.48¢
Galv'd, 28	6.00 @ 5.85¢
Patent Planchet	10¢ @ 9¢
Russia	9 1/2¢ @ 10¢
American Cold Rolled B. B.	5¢ @ 7¢

English Steel from Store.

Best Cast	15¢
Extra Cast	16 1/2¢
Swaged, Cast	17¢
Best Double Shear	15¢
Blister, 1st quality	12 1/2¢
German Steel, Best	10¢
2d quality	9¢
3d quality	8¢
Sheet Cast Steel, 1st quality	15¢
2d quality	14¢
3d quality	12 1/2¢

METALS.

Tin.

Banca, Pigs	25¢
Straits, Pigs	25¢
English, Pigs	24 1/2¢
Straits in Bars	25¢

Tin Plates.

Charcoal Plates.—Bright.	Per box.
Melyn Grade	\$6.00 @
IC, 10 x 14	6.25 @
IC, 12 x 13	6.00 @
IC, 14 x 20	12.50 @
IC, 20 x 28	7.50 @
IX, 10 x 14	7.50 @
IX, 12 x 12	7.50 @
IX, 14 x 20	15.50 @
IX, 20 x 28	5.75 @
DC, 12 1/2 x 17	7.25 @
DX, 12 1/2 x 17	6.00 @
Call and Grade	6.00 @
IC, 12 x 12	6.25 @
IC, 14 x 20	6.00 @
IX, 10 x 14	7.50 @
IX, 12 x 12	7.50 @
IX, 14 x 20	15.50 @
IX, 20 x 28	5.75 @
DC, 12 1/2 x 17	7.25 @
DX, 12 1/2 x 17	6.00 @
Charcoal Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20	\$5.00 @
10 x 20	7.50 @
20 x 28	10.25 @
IX, 10 x 14, 14 x 20	5.75 @
BV Grade.—IC, 10 x 14, 14 x 20	4.60 @
Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20	\$4.62 1/2 @
20 x 28	9.25 @
IX, 14 x 20	5.62 1/2 @
20 x 28	11.37 1/2 @
Abecarne Grade.—IC, 14 x 20	4.50 @
20 x 28	9.00 @
IX, 14 x 20	5.50 @
20 x 28	10.80 @

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	\$5.00 @
10 x 20	7.50 @
20 x 28	10.25 @
IX, 10 x 14, 14 x 20	5.75 @
BV Grade.—IC, 10 x 14, 14 x 20	4.60 @
Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20	\$4.62 1/2 @
20 x 28	9.25 @
IX, 14 x 20	5.62 1/2 @
20 x 28	11.37 1/2 @
Abecarne Grade.—IC, 14 x 20	4.50 @
20 x 28	9.00 @
IX, 14 x 20	5.50 @
20 x 28	10.80 @

Tin Boiler Plates.

IXX, 14 x 26	112 sheets. \$12.50 @ \$12.75
IXX, 14 x 28	112 sheets. 12.75 @
IXX, 14 x 31	112 sheets. 14.25 @

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢	
1 lb. Manufactured (including all articles of which Copper is a component of chief value), 4¢ and values.	
Lake	@ 18 1/2¢
"Anchor" Brand	@ 18¢

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Over 64 oz.	82 to 64 oz.	16 to 82 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72	25	25	25	25	25	25	25	25	25
30	72	25	25	25	25	25	25	25	25	25
36	96	25	25	25	25	25	25	25	25	25
36	96	25	25	25	25	25	25	25	25	25
48	96	25	25	25	25	25	25	25	25	25
60	96	25	25	25	25	25	25	25	25	25
60	96	25	25	25	25	25	25	25	25	25
84	96	25	25	25	25	25	25	25	25	25
84	96	25	25	25	25	25	25	25	25	25
Over 84 in. wide	28	30	30	30	30	30	30	30	30	30

All Bath Tub Sheets. 16 oz. 14 oz. 12 oz. 10 oz. Per pound. \$0.35 0.30 0.25 0.20

Bolt Copper, 3/4 inch diameter and over, per pound. 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier. Per pound. 25¢

12 ounce and up to 14 ounce to square foot. 25¢

10 ounce and up to 12 ounce. 31¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each. 8¢

Tinning sheets on one side, 30 x 60 each. 30¢

For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each. 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each. 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each. 12¢

Tinning sheets on one side, other sizes, per square foot. 2 1/2¢

For tinning both sides double the above prices.

Planished Copper.

Planished Copper List May 5, 1888. Net

Brass and Copper Tubes.

Seamless Copper. Seamless Brass. 3/4 inch 50¢ 3/4 inch 47¢

1/2 inch 44¢ 1/2 inch 41¢

3/8 inch 42¢ 3/8 inch 39¢

3/16 inch 40¢ 3/16 inch 37¢

1/4 inch 39¢ 1/4 inch 36¢

1/8 inch 37¢ 1/8 inch 34¢

1/16 inch 34¢ 1/16 inch 31¢

Roll and Sheet Brass.

Discount from list. 10 @ 15 %

Spelter.

Duty: Pig, Bars and Plates, \$1.50 per 100 lb.

Western Spelter. 5 1/2¢ @ 6¢

"Bergenport" 5 1/2¢ @ 6¢

"Bertha" 7 1/4¢ @ 8¢

Zinc.

Duty: Sheet, 3 1/4¢ per lb.

600 lb casks. 69¢

Per lb. 7 1/2¢

Lead.

Duty: Pig, \$2 per 100 lb. Old Lead, 2¢ per lb. Pipe and Sheets, 3¢ per lb.

American. 4 1/4 @ 4 1/2¢

Newark. 4 1/4 @ 4 1/2¢

Bar. 5 1/2¢

Pipe, subject to trade discount. 6 1/2¢

Tin-Lined Pipe, subject to trade discount. 15¢

Block Tin Pipes, subject to trade discount. 45¢

Sheet, subject to trade discount. 7 1/2¢

Solder.

1/2 @ 1/4 (Guaranteed). 10¢

Extra Wiping. 13 1/2¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson. 13 1/4 @ 14¢

Hallett's. 11 1/2¢

Plumbers' Brass Work.

Discount per cent.

Ground Bibbs and Stops. 55¢ @ 10¢

Ground Stops, Hydrant Cocks, &c. 55¢ @ 10¢

Corporation Cocks. 55¢ @ 10¢

Corporation Cocks, "Mueller" Pattern, from Western list. 55¢ @ 10¢

Ground Basin and Shampooing Cocks. 50¢ @ 10¢

Compression Basin Cocks. 50¢ @ 10¢

Compression Basin and Sink Cocks. 50¢ @ 10¢

Compression Pantry Cocks. 50¢ @ 10¢

Compression Double Basin and Shampooing Cocks. 50¢ @ 10¢

Compression Double Bath Cocks. 50¢ @ 10¢

Compression Bibbs, Urinal Cocks, Sill Cocks, Stops, Hopper Cocks, Hydrant Cocks and Ball Cocks. 50¢ @ 10¢

Basin Plugs and Basin Grates. 55¢ @ 10¢

Bath and Wash Tray Plugs. 55¢ @ 10¢

Bath Wastes and Washers, Bath and Basin Valves, Sewer and Vacuum Valves, Cistern Valves, Pump Valves and Strainers, Ship Closet Valves and Suction Baskets. 55¢ @ 10¢

Basin Clamps, Basin Joints and Strainers. 55¢ @ 10¢

Boiler Couplings, Ground Face, per set \$1.25. 10¢

Boiler Couplings, Plain Face, per set \$1.20. 10¢

Water Back Valve and Plain Couplings, Soldering Nipples and Unions. 55¢ @ 10¢

Union Joints. 60¢ @ 10¢

Hydrant Nozzles, Handles and Guides, Sockets and Clamps, Street Washer Screws and Guides. 55¢ @ 10¢

Hose Goods. 55¢ @ 10¢

Steam and Gas Fitters' Brass and Iron Work. Discount per cent.

Brass Globe Valves. 60¢ @ 10¢

Finished Brass Globe Valves, with Finished Brass Wheels. 40¢ @ 10¢

Brass Globe Valves, with Patent Wood Wheels. 60¢ @ 10¢

Brass Globe Angle and Corner Valves. 60¢ @ 10¢

Brass Radiator Angle Valves. 60¢ @ 10¢

Brass Radiator Angle Valves, Frink's Patent. 60¢ @ 10¢

Brass Cross and Check Valves. 60¢ @ 10¢

Brass Check Valves. 60¢ @ 10¢

Brass Hose Valves. 60¢ @ 10¢

Brass and Iron Frink Valves. 60¢ @ 10¢

Brass Safety Valves. 60¢ @ 10¢

Brass Vacuum Valves. 50¢ @ 10¢

Brass Whistle Valves. 60¢ @ 10¢

Brass Balance, Back Pressure and Foot Valves. 50¢ @ 10¢

Brass Butterfly and Throttle Valves. 50¢ @ 10¢

Brass Pump Valves. 50¢ @ 10¢

Brass Steam Cocks. 57 1/2¢ @ 10¢

Brass Service, Meter and Union Meter Cocks. 57 1/2¢ @ 10¢

Brass Whistles, Water Gauges and Oil Cups. 60¢ @ 10¢

Brass Hollow Plug, Tallow and Globe Oil Cups. 50¢ @ 10¢

Brass Lubricators. 50¢ @ 10¢

Brass Air Valves. 60¢ @ 10¢

Brass Air Cocks. 60¢ @ 10¢

Brass Gauge Cocks. 55¢ @ 10¢

Brass Cylinder Cocks and Steam Bibbs. 50¢ @ 10¢

Brass Swing Joints and Expansion Joints. 50¢ @ 10¢

Brass Test Pumps. 50¢ @ 10¢

Brass Steam Fittings, Rough. 60¢ @ 10¢

Brass Steam Fittings, Finished. 20¢ @ 10¢

Brass Union Joints. 60¢ @ 10¢

Brass Soldering Unions and Nipples. 55¢ @ 10¢

Brass Hose Fittings, Fusible and Boiler Plugs. 55¢ @ 10¢

Iron Body Globe, Angie, Cross and Check Valves. 60¢ @ 10¢

Iron Body Safety, Throttle, Back Pressure, Butterfly and Foot Valves. 60¢ @ 10¢

Iron Cocks, all Iron. 65¢ @ 10¢

All Iron Valves. 65¢ @ 10¢

Miscellaneous.

Discount per cent.

Cast Iron Fittings. 70¢ @ 10¢

Plugs and Bushings. 75¢ @ 10¢

Malleable Iron Unions. 67 1/2¢